

THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
Railway Engineer • TRANSPORT • The Railway News
The Railway Times • Herapath's Railway Journal • RAILWAY RECORD.
RAILWAYS • ESTABLISHED 1835 • RAILWAY OFFICIAL GAZETTE

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1.
Telephone: WHITEhall 9233 (12 lines) Telegrams: "Trazette Parl, London"

BRANCH OFFICES

GLASGOW: 87, Union Street Central 4646
NEWCASTLE-ON-TYNE: 21, Mosley Street . . . Newcastle-on-Tyne 22239
MANCHESTER: Century House, St. Peter's Square . . . Central 3101
BIRMINGHAM: 90, Hagley Road, Edgbaston . . . Edgbaston 2466
LEEDS: 70, Albion Street Leeds 27174
BRISTOL: 8, Upper Berkeley Place, Clifton . . . Bristol 21930

Annually £4 10s. by post.

Single copies, Two shillings

Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Vol. 98]

FRIDAY, FEBRUARY 20, 1953

[No. 8

CONTENTS

	PAGE
Editorial Notes	197
The Transport Bill on Report	199
December Operating Results	199
A British Electrification in Brazil	200
Gas Turbine Operating on British Railways	201
Great Northern Railway (Ireland)	201
Letters to the Editor	202
The Scrap Heap	203
Overseas Railway Affairs	204
Publications Received	205
From Timetable to Substations	206
French National Railways Co-Co Locomotives Shunting Locomotives for the South African Railways	212
Personal	215
News Articles	218
Contracts and Tenders	221

B.T.C. Fares Application Upheld

THE Transport Tribunal held a two-day hearing on Monday and Tuesday of objections put forward by the London County Council and others to the Passenger Charges Scheme, 1953, of the British Transport Commission. Argument revolved round the point whether the scheme was in fact a new scheme, or an amendment to the existing one which took effect on March 2 last year. In the latter case, which was argued by Mr. H. V. Lloyd-Jones, Q.C., for the London County Council, its proposals could not be considered because the 1952 scheme has not yet been in operation for 12 months. This argument is based on Section 79(1)(i) of the Transport Act, 1947, under which it is laid down that the tribunal shall not entertain any application for the alteration of any scheme if less than 12 months have elapsed since the coming into force of the scheme. Mr. Lloyd-Jones quoted Lord Latham's statement of January 5 (reported in our January 9 issue) that it was necessary to raise about another £6 million, to support the contention that the scheme was "a hand-to-mouth improvisation to get more money." Mr. Hubert Hull, President of the Tribunal, in giving his decision on Tuesday, said that whatever else the present scheme might be, it was not an application for an alteration in the 1952 scheme, for it provided for the

revocation of that scheme. This means that the full inquiry into the proposed increases will follow on March 9. Leave of appeal was given to the L.C.C., and the Tribunal's decision is being urgently studied at the present moment by the Council in order to decide whether an appeal shall be lodged. This week's hearing has concerned a legalistic point, but the fact that there have been 94 objectors to the application, including the City of London, 23 other county councils as well as the L.C.C., and five county boroughs, shows the concern with which the frequency of such applications is viewed by representatives of the travelling public.

Judge Robert V. Fletcher

THE retirement of Judge Robert V. Fletcher from the Association of American Railroads should not pass without tribute to his long service to the United States railways. On the death in November, 1946, of Mr. J. J. Pelley, then President of the Association, Judge Fletcher took over the Presidency until a suitable successor could be appointed; he held this appointment until Mr. William T. Faricy was appointed President in 1947. Judge Fletcher has long been familiar with British Railways, having visited England in 1929, and some will recall the stimulating letters received from him during the years before his country was itself at war. He was born in Kentucky in 1869, and after attending the University of Mississippi and American University at Washington, became a Judge of the Supreme Court of Mississippi. In 1911 he joined the Illinois Central as general attorney at Chicago, becoming successively general solicitor, general counsel, and finally Vice-President. In 1934 he was appointed Vice-President & General Counsel, Association of American Railroads, Washington, becoming Vice-President (Law) in 1942 and Vice-President (Research) in 1944. After Mr. Faricy became President Judge Fletcher served as Special Counsel 1947-1952. Few have been more imbued with the human touch or have carried on executive railway work until well over fourscore years. All will wish him good health in his well-merited retirement.

Achievements in Scotland

WHEN on his recent visit to Scotland he alluded to the savings made by British Railways since their formation, Mr. John Elliot, Chairman of the Railway Executive, some of whose remarks we reported last week, said that Scotland was contributing more than £3,000,000 of the total economies of £16,000,000 a year. The railways in Scotland could best be operated as a single unit and only the separate financial ownership had prevented the former L.M.S.R. and L.N.E.R. from so working them. Mr. Elliot praised the loyalty and efficiency of the officers and staff of the Scottish Region. He hoped that the "Starlight Special" service being introduced in April would be popular not only from Scotland to the South but for bringing visitors to Scotland. The first vessel under the £1,000,000 Clyde fleet modernisation scheme was about to be launched; it would be followed by three other passenger and three general purpose ships. Speaking generally, Mr. Elliot emphasised that what British Railways needed today were the materials and capital investment to enable them to electrify where the cost could be justified; build and run more diesel trains; modernise stock and stations, mechanise large depots, and carry out even more schemes of signalling and track improvement.

Overseas Railway Traffics

BARSI Light Railway receipts for January were £34,900 (at Rs. 13 to the £), compared with £20,500 for December last, and £28,400 for January, 1952. There is no true comparison, however, because of the incidence last month of a local fair which fell in February of last year. Total receipts for the ten months to January 31 were £311,400 against £341,100 a year before. It will be interesting to watch the progress of this railway's fortunes until absorption by the (presumably) Central Railway of

India—and afterwards, if figures are available. Since the Canadian Pacific results for December were published, retroactive wage agreements with certain groups of operating staff have increased working expenses. The aggregate net earnings for the year 1952, including provision in expenses for the portion of the wage adjustments applicable, now are announced as £9,643,000 (at \$3 to the £), and not £10,274,000 as stated previously, so that the increase in net earnings for 1952 compared with 1951 is not £1,336,000 but £706,000.

Facts and Statistics of Electric Freight Working

IT is unfortunate that hitherto judgment of how the first British main-line freight electrification is working has had to be based on figures that are liable to mislead all except those in close touch with the scheme. *British Transport Commission Statistics* has shown 51 locomotives as being in service on the Wath - Dunford Bridge section of the Eastern Region, although in fact the traffic is worked at present with 24 locomotives, four of which are spare. The balance are at Dukinfield, but a strict interpretation of the rules prevents them from being recorded as "in store," because they run from time to time in the sidings in order that they may be kept in working order. An article in this issue shows also that the number given as being under repair is affected by modifications now being carried out at routine maintenance periods. Conditions on the line are unusual in the amount of dust and grit that is stirred up by the exhaust cooling air from the motors and is then liable to be drawn into the cooling system. Some alterations to filters and so on have had to be made as locomotives become available at the depot, and the opportunity is being taken also to make a minor alteration in the control wiring to reduce the risk of drivers inadvertently overtaxing the resistances.

After Flood and Snowstorm

THE floods on the East Coast and in the Thames estuary have set British Railways a threefold problem, of restoring their own lines, of diverting services, and of conveying urgently needed coast defence materials and relief supplies to coastal areas as fast as circumstances permit. Some idea of the extent of the problems and of the way they are being solved can be gained from another page. The operating difficulties as well as those of the civil engineer are grave; the isolation by flood of locomotives and rolling stock, the necessity to organise railheads adjoining the flooded areas, and the many diversions are reminiscent of wartime. The greatest traffic difficulties seem to be those occasioned by the isolation of Tilbury, Southend, and other places on the Tilbury Section of the Eastern Region, which has involved diversion of intensive goods and passenger traffic. The gravity of damage to the Kent Coast main line of the Southern Region is shown by the decision to reinstate the Canterbury spur to allow diversion of traffic during the coming holiday season. The temporary suspension of the important Harwich-Zeebrugge wagon ferry is a heavy blow, despite prompt steps to divert ferry traffic via Dover. Subsequent heavy snowfalls in the North have necessitated efforts to keep industry supplied with coal, largely by keeping marshalling yards open throughout last weekend.

Flood Damage in Holland

AN impression of the extent of the damage to track and structures on the Netherlands Railways caused by flooding may be gained from the illustration reproduced elsewhere in this issue showing the line near Dordrecht. This town lies on the electrified section between Rotterdam, Breda, and Eindhoven, with its fork to Roosendaal which forms part of the through route between Amsterdam, Brussels, and Paris. Between Dordrecht and Lage Zwaluwe, where the Eindhoven and Roosendaal routes diverge, the line is out of action; it is this section which includes the mile-long Moerdijk Bridge over the Hollands Diep which has been temporarily restored after being wrecked in the

war. All traffic to Belgium and Germany formerly passing through Rotterdam and Dordrecht has now to be worked round by way of Utrecht and s'Hertogenbosch, entailing a recasting of schedules of international trains to fit them into what is already a very busy line. As may be seen from our illustration, the pre-stressed concrete portals carrying the overhead line, though displaced, have otherwise stood up well to the impact.

Reviving U.S.A. Branch Passenger Services

A DEFINITE turn in the tide appears to be beginning in passenger service operation in the United States. While some railways, like the New York Central and the Chesapeake & Ohio, have been conducting painstaking research into all their passenger working, in order to discover and if possible eliminate factors which result in operational losses, other lines are boldly tackling the problem by increasing their services and making them more attractive. This applies particularly in New England, where both the New York, New Haven & Hartford and the Boston & Maine made considerable additions to local services from mid-September. The New Haven added 50 trains daily to its timetable, restoring passenger service to two branches which had been entirely without it for a considerable time past, in one case for 24 years. Profitable operation is being made possible by the widespread introduction of capacious diesel-hydraulic railcars, which for their comfort and speed are very popular with the travelling public, and are equally valuable to the railway operating authorities because they can be worked by a driver and conductor only, instead of the much larger normal American train crew. Diesel 45-seat railbuses, very similar in design to motorcoaches, are also coming into use. The wisdom of this policy already is evident in increased passenger patronage.

Power Signalling at Münster

AN interesting example of how power signalling is effecting economies in the working of some of the larger German stations is given in an article by Herr R. Kasten in the December, 1952, issue of *Signal und Draht*, describing the new panel type signal box at the southern end of Münster (Westphalia) Station, where before the war there was a 1912-type power frame in a signalbox carried over the lines. This was destroyed during hostilities and replaced by a 1943-type frame in a provisional wooden building. It was intended to adopt this apparatus for permanent replacement, but in 1947 the management decided to install relay interlocking. Station and marshalling yard are closely interconnected and under the old arrangements no fewer than four supervisors were required to control the traffic. Concurrently with the opening of the new box, panel apparatus was brought into service in a new supervisor's post, where one official now can direct the whole of the area concerned. Special arrangements enable this equipment to control the remaining old pattern signalboxes.

Shunting Engines for South Africa

DURING 1950-51 the South African Railways administration sanctioned the expenditure of approximately £5,750,000 for new works and improvements which included a new goods depot and the enlargement of the station at Johannesburg, marshalling yards at Vereeniging and Bellville, and the remodelling of Braamfontein Yard. Furthermore, wagon loadings increased by some 629,000 during 1950-51 compared with 1947-48. To perform the increased shunting involved, an order was placed with Fried, Krupp Lokomotivfabrik for 100 "S2" class shunting locomotives having a tractive effort of 25,600 lb. The engines, which are described and illustrated elsewhere in this issue, are equipped with cast-steel double-bogie, six-wheel tenders. The engine frames are of rolled-steel, finished to a thickness of 3½ in. An innovation on the South African Railways is that on ten of the boilers the

water space and crown stays are fitted without threads and are welded in position, and the inner fireboxes welded into the firebox shell crown, both of which have been done as a trial measure.

The Transport Bill on Report

ON February 4, 9 and 10, the House of Commons again considered the Transport Bill on the Report stage. The Bill has now been through the Committee stage and has been reported to the House; a new draft of the Bill is available incorporating the amendments made. So far as the railways are concerned, the discussion and amendments on the Report produced little that was new, but something more was added to the general picture now emerging of the Government's intentions. At about 8.30 p.m. on February 9, the debate on the reorganisation of the railways began (clauses 14 and 15). The Opposition moved an amendment to delete the clause providing for the abolition of the Railway Executive and the substitution of area authorities.

This was resisted by the Government. "Nothing," said the Parliamentary Secretary, "has caused less criticism from the public as a whole than the proposal for the decentralisation of the railways." When asked for the alternative clauses proposed by the British Transport Commission, which the Minister had said on December 15 would be made available to the House, Mr. Braithwaite stated that these had been placed in the Library. No one, apparently, had seen them, and they were not quoted in the debate. By 10.30 p.m. clauses 14 and 15 had been approved, including an important amendment by the Minister—which was not discussed—deleting the provision for public inspection of the scheme and instead leaving it to the Minister to decide whom he will consult.

On February 10 there was an important discussion on clause 16(6)—which provides that the Minister may direct that the shares which the B.T.C. hold in bus companies shall be disposed of to the extent that they afford control. "If we are right," said the Minister, "as we believe we are, in our view on monopoly on road haulage, why should we not take steps . . . that may be necessary in this field of passenger transport as well?" Mr. Geoffrey Wilson, however, saw no connection between this provision and substituting a bus service for a branch line; all he wanted to do was to return to the position of the former railway companies, which the clause did. He had obviously overlooked the fact that conditions have changed. Lord Hinchinbrooke appeared to want the clause made mandatory and not merely permissive, suggesting that it might have to be hardened in the Lords. His reasons were no more convincing than Mr. Wilson's, but the Minister's logic was inescapable. It depends, of course, entirely on whether he is right about road haulage. The amendments to the clauses on charges went through as expected, and this part of the Bill is now greatly improved.

There was an interesting discussion on clause 24 (amendments as to the general duty and constitution of the B.T.C.). Lord Hinchinbrooke gave out some extra items of information:—(1) The Docks & Inland Waterways Executive would remain; (2) the Commission "will have a very large area of functions to look after, even if it is not responsible for executive decisions in the sense that it has been responsible hitherto"; (3) he had always hoped the B.T.C. would consist of a Chairman and Vice-Chairman, and perhaps one other who would be full-time, and all the rest would be part-time—"but whether these part-time members are to be the Chairmen of the areas or regions, or outside persons altogether, has yet to be determined." During the discussion on clause 24 Mr. Geoffrey Wilson contributed the priceless piece of information that the total fees to the former railway directors cost £96,000, whereas the Railway Executive were costing something like £500,000. As the Railway Executive is more nearly the equivalent of the old General Managers, the comparison was not of great value. Mr. Lennox-Boyd stated that the wording of clause 24(2), providing for the appointment of "a person who has had experience in the

organisation of workers" to the B.T.C., would be altered so as to make it possible to increase the members in this category to two if the total number of members of the Commission made this possible. In that event the T.U.C. would be consulted as to whom they would like to be the second trade unionist.

On clause 26—compensation to officers and servants—an important addition has been made to cover railway officers and staff who may be affected by the reorganisation proposed. The effect of the amendment may be seen clearly if the original clause and the latest version are compared:—

First Draft

26(1) The Minister shall, by regulations provide for the payment by the Commission, in such cases and to such extent as may be specified in the regulations, of compensation to officers or servants of the Commission who suffer loss of employment or loss or diminution of emoluments or pension rights, or whose position is worsened, in consequence of the duties imposed on the Commission by this Act as to the disposal of the property held by the Commission for the purposes of the existing road haulage undertaking or of any modification of the functions of the Commission effected by or by virtue of this Act.

Present Draft

The Minister shall by regulations provide for the payment by the Commission, in such cases and to such extent as may be specified in the regulations, of compensation to officers or servants of the Commission who suffer loss of employment or loss or diminution of emoluments or pension rights, or whose position is worsened, in consequence of the duties imposed on the Commission by this Act as to the disposal of the property held by the Commission for the purposes of the existing road haulage undertaking of the powers and duties conferred on the Commission and the Minister by this Act in connection with the reorganisation of that part of the Commission's undertaking which consists in the operation of the railways, or of the modifications of the functions of the Commission effected by this Act.

A general comment on the Bill as it now stands is that it has been tightened up considerably but that it stands or falls by its fundamental principle of competition in public transport.

December Operating Results

THE 1952 series of *Transport Statistics* ended with the publication of Number 13 covering the four-week period to December 28. For the most part the bulletin added to the long list of decreases recorded by British Railways since the middle of May. A small increase of 91,000 tons in freight train traffic (0.4 per cent) was caused by the customary spurt in coal output before the Christmas holidays. Coal forwardings rose by 379,000 tons (3.1 per cent) and constituted 60.4 per cent of the total originating traffic. Mineral tonnage was higher also by 45,000 (1 per cent), but the catastrophic decline in merchandise, which began in April, went on. A further 321,000 tons of this high-rated traffic was lost (8.2 per cent), making the total decrease for 52 weeks to December 28 no less than 3,040,000 tons (5.7 per cent). The set-back affected all Regions, being especially severe in Scotland throughout last year. There is no sign of the downward trend abating in 1953 as merchandise receipts for the January four-week period were 1.5 per cent less than a year ago.

MOVEMENT OF TRAFFIC

In December net ton-miles were lower by 59,765,000 (3.6 per cent). The average length of haul for all classes of traffic was about 2½ miles shorter. The number of wagons loaded was reduced by 48,000 (1.9 per cent) and loaded wagon miles decreased by nearly 11 million (4.6 per cent). Freight train miles were cut by 229,000 (2.2 per cent) and train hours by 32,000 (2.4 per cent). The train load of 161 tons was almost 2½ tons lighter than it was in December, 1951. Coaching train miles were 300,000 (1.8 per cent) below 1951 and 1,094,000 (6.1 per cent) below 1950. The stage might seem set for a decided improvement in traffic movement, but December is invariably a trying time for railway operations and a freight

train speed of 7.94 m.p.h. was just a shade better than the 1951 average.

In each December since 1948 freight train speed in the London Midland Region has been below 7 m.p.h. and fully a mile an hour less than the all-line average. Last December, for the first time, the Western Region's speed of 7.89 m.p.h. was below the general average, while the other Regions recorded figures varying from 8.14 in the Eastern to 9.85 in the Scottish. In addition to working its freight trains at 9.53 m.p.h. the North Eastern was the only Region to run its steam coaching trains at 15 m.p.h., a mile an hour above the general average.

The index of freight train operating output—net ton miles per train hour—fell from 1,067 to 1,050. That was the lowest level touched since the critical weeks at the end of 1950. The Western Region produced only 997 ton-miles in a train hour, a decrease of 56 units (5.3 per cent). Though working 35 units less, the North Eastern topped the regional list with an output of 1,309, which was 29 per cent above the London Midland figure of 1,014 and 10.5 per cent above the Eastern's return of 1,184.

The third measure of movement—wagon miles per train mile—dropped from 206 to 202 for the whole system, the lowest figure since the poor figure of 189 in December, 1950. During the first 48 weeks of 1952 this index varied from 215 to 238. In December it fell to 194 in the London Midland Region, a single point below 1951, and to 187 in the Western Region, a decrease of 13 points or 6.6 per cent. That was the first occasion last year on which this statistic was below 200 in any of the five English Regions. The all-line average was saved from collapse by the North Eastern's return of 237 wagon miles and the Eastern's return of 221. All three gauges of mobility prove that railway working proceeded more freely on the eastern side of the country than on some of the lines serving the Midlands and western districts.

ELECTRIFIED FREIGHT LINES

On the Manchester—Sheffield—Wath electrified lines 21,734 train miles were worked, the smallest number since the opening in February, leaving aside the holiday months of August and September. The number of "assisting required" engine miles was 14,650 and in addition 11,365 "assisting not required and light running" engine miles were run. Wagon miles totalled 869,000 and were compiled at the low rate of 117 in a train hour. Train speed was no higher than 6.8 m.p.h. One more electric locomotive was put into service, so that according to the principle described on another page the total stock is shown as 52. Not a single machine was under repair at December 28. That was satisfactory and we hope that the difficulties inseparable from the start of new working methods have been surmounted, so that better results can be attained in the current year.

RAILWAY PASSENGER TRAFFIC

British Railways initiated 70,901,000 passenger journeys in the month of November, a decrease of 2,230,300 from 1951 (3 per cent). More than two-thirds of the decrease occurred in the Southern Region, where early morning and workmen's travel was 10.4 per cent less and season ticket journeys were 6.3 per cent fewer. The other Regions issued fewer early morning and workmen's tickets, but, save for the Eastern Region, had more season ticket journeys. The North Eastern and Scottish Regions increased their total carryings, largely by widening the scope of excursion, weekend and cheap day travel. During the 11 months to November, 1952, British Railways carried about 910,542,000 passengers, a decrease from the same months of 1951 of 10,935,000, or over 1.1 per cent.

In November the number of first class journeys was 1,877,000, a decrease of 37,000 (1.9 per cent). Southern Region bookings dropped from 476,000 in November, 1951, to 390,000, or by nearly 18 per cent. The Eastern Region lost 16,000 first class journeys (9.3 per cent), while the Western was short of its November, 1951, bookings by only 2,000 (1 per cent). The London Midland issued 23,000 more tickets, the North Eastern 10,000 more and

the Scottish Region 34,000 more. Evidently the factors influencing first class travel are not the same in all parts of the country. Over the whole system the number of journeys was about 19,796,000 during the 11 months to November, 1952, representing a decrease of 2,842,000 or 12.5 per cent.

ROAD TRANSPORT

In the December period British Road Services carried 2,798,000 tons, 543,000 tons less than in December, 1951, (16.2 per cent). Vehicle miles totalled 47,840,000, a reduction of 6,212,000 (11.4 per cent). During the 52 weeks to December 28, carryings of British Road Services diminished by some 5,188,000 tons, or 11 per cent.

Over the same period of 52 weeks, Road Passenger Transport expanded its volume of business by 35,333,000 passenger journeys (1.5 per cent). The total number of passengers, 2,354.7 million was 36 per cent less than the multitude of people carried by London Transport in buses, coaches, trolleybuses and trams. To cope with the growing traffic, Road Passenger Transport ran 558,673,000 car-miles, an increase of 13,371,000 on 1951 (2.5 per cent). That mileage was 30 per cent above the mileage scored to the account of the London Transport fleet of road vehicles.

At the time of writing the prospects are that in 1953 British Road Services will have a hard struggle to prevent further losses of tonnage, whereas additional traffic will be developed by Road Passenger Transport in the ordinary course of business.

A British Electrification in Brazil

ELECTRIFICATION of the section of the former San Paulo Railway between Jundiai and Mooca (41 route-miles) was inaugurated in July, 1950. Since that date a further 13 route-miles from Mooca to Santo André and Maua have been converted, this additional work having been completed in 1952. The undertaking and the results achieved with it so far were the subject of a paper presented to the Institution of Electrical Engineers on February 5 by Mr. R. J. B. Chatterton of the English Electric Co. Ltd., and Mr. D. H. Rooney of British Insulated Callender's Construction Co. Ltd., these two firms having supplied respectively the substation and traction equipment, and the overhead line installations. Three main reasons led to the decision to electrify, and the award in 1946 of a contract covering the whole scheme to the English Electric Export & Trading Co. Ltd. They were: increased traffic density, passenger traffic alone having grown by 22 per cent between 1946 and 1949; the rising cost of coal, and difficulties in importing it experienced during the war; and the increased hydro-electric resources of the State of San Paulo, where the power generated increased by about 140 per cent between 1940 and 1948.

Particulars are given in the paper of economies and increased traffic capacity already realised by the electrification. Fuel and electrical energy costs are shown to have fallen to about 12 per cent of total earnings in 1951 despite a 44 per cent rise in the average cost of coal. In 1951, the first full year of electrification, total ton-miles rose by some 12.5 per cent and the share handled by electric locomotives went up during the 12 months from about 200 million to just over 500 million ton-miles. There was a concurrent increase over 1949 in passenger traffic of approximately 20 per cent. The paper describes in detail the distribution system which provides the 3,000 V. d.c. traction supply. A short double-circuit line was erected to link existing 88-kV. transmission lines of the San Paulo Tramways, Light & Power Company with the main railway substation at Tiete. From here 33-kV. transmission lines are carried on the overhead structures to feed the other two substations at Caieiras and Campo Limpo. Each substation has been equipped initially with two 2,000-kW. rectifier groups, but provision has been made for a third, and at Tiete this additional capacity is being provided in the current year. A control room at Tiete is the centre of an impulse-operated system for operation, indication, and supervision of a.c. and d.c. switchgear and auxiliary

apparatus at the three substations and four track-sectioning cabins. The 15 Co-Co locomotives of 3,000 h.p. operating on the line are described in some detail. It will be recalled from the article in our November 4, 1949, issue that they are equipped for regenerative braking, and for this reason all substations have seven banks of loading resistors which are switched in automatically to absorb excess power returned to the line.

Since the paper was submitted the three multiple-unit trains ordered some time after the locomotives have gone into traffic. These sets, described in the paper, consist of two driving trailer coaches and a central motor coach. All vehicles are of lightweight construction of tubular hollow beam form. Four self ventilated traction motors, of 200 h.p. (1-hr.) and 155 h.p. (continuous) are carried in the motor coach bogies and are controlled by series and parallel connection of the two series pairs. Each train has a tare weight of 111½ tons, with seating capacity for 198 passengers. The concluding sections of the paper deal with the overhead line equipment and its erection, this work necessitating special measures because of poor road access for materials and limited occupation time.

Gas Turbine Operating on British Railways

THE potential advantages of the gas turbine are sufficiently attractive to merit considerable effort to promote its use for railway traction. Some of the problems involved in achieving this end are peculiar to the gas turbine or its necessary auxiliaries, others are problems common to most non-steam locomotives. In presenting his paper "Operating Experiences with Two Gas-Turbine Locomotives" before the Institution of Locomotive Engineers on February 18, Mr. A. W. J. Dymond, Assistant (Technical) to the Mechanical & Electrical Engineer, Western Region, British Railways, gave some details of experience so far gained with the Brown-Boveri and Metropolitan-Vickers gas turbine locomotives operating on the Western Region.

The gas turbine had greater power-weight-space ratios than any other prime mover for railway use, said Mr. Dymond; it had an optimum thermal efficiency nearly 2½ times that of a normal steam-locomotive, but not yet approaching that of the diesel. It could burn residual fuels, and might in the near future be capable of burning coal. Because of the smaller number of moving parts gas-turbine locomotives were claimed to require substantially less maintenance than diesel locomotives, as well as having a very reduced consumption of lubricating oil. On the debit side gas turbines had not as yet achieved thermal efficiencies approaching diesel figures, and their part-load efficiency fell off substantially compared with the optimum.

Furthermore, a considerable part of the operating time of a locomotive was occupied at much less than maximum power, and the combined effect of these two factors was to give a useful work-to-fuel ratio for a complete trip not very different from that of a good steam locomotive. The necessity of providing a special boiler for steam heating and carrying a water supply on the engine solely for the purpose was, in his opinion, a regrettable complication in design. Mr. Dymond referred at some length to operating experience gained with the gas-turbine locomotives and said that the mileage run by the Brown-Boveri locomotive up to the middle of September, 1952, was 122,118, and the turbine hours 3,296.

The Metropolitan-Vickers gas-turbine locomotive was a joint responsibility between the railway and the firm, which persisted through all preliminary trials and service runs and does so at present. The locomotive was stopped in September, 1952, for a defect, and up to that date had achieved 42,021 miles, and completed 1,237 turbine hours. The radius of action of both locomotives had been in some measure restricted by the fuel tank capacity provided. This had proved ample for the 225-mile run from Paddington to Plymouth specified when the projects were first examined, but experience had shown that advantage could have been taken of further short trips at the end of the long runs up to 250 miles, were it not necessary to refuel.

This was of some importance in the case of the Brown-Boveri locomotive, as the necessity for special heating facilities for the residual oils at motive power depots made multiplication of these expensive facilities—for one locomotive only—a very costly provision. Arrangements were in hand to increase the tankage on the Metropolitan-Vickers locomotive and provide in addition a fuelling pump on the locomotive, so that gas oil could be taken direct from a tank wagon. In either case it would seem, said Mr. Dymond, that omission of the double-ended driving facilities, and the re-arrangement of gear on the frame could have made possible substantial increased fuel capacity, with greater advantage for these experimental locomotives.

The initial concepts of the designs were some six years old, during which time efficiencies of compressors and turbines had made advances, and it was for debate whether today a machine would incorporate the two-shaft principle, or whether two complete gas turbine units each of half the total output required should be provided, to overcome the drooping characteristics of the efficiency-load curve.

Great Northern Railway (Ireland)

THE annual report for the year ended December 31, 1952, of the Great Northern Railway (Ireland), of which Lord Glenavy is Chairman, shows a deficit of £945,804. The total deficit, including the previous year's debit balance, was £1,918,050, of which £942,600 was accounted for by depreciation.

The total amount received during the year from the Governments of the Republic and Northern Ireland was £905,265; of this sum £395,000 represented expenditure for renewals and replacements and the remaining £510,265 expenditure on day-to-day operation. These figures, however, are not included in the accounts as the form prescribed by Statute for the accounts did not contemplate the receipt of assistance from Government funds.

Some of the principal results for the year, compared with those of 1951, appear below:—

	1952	1951
No. of passengers	5,900,198	6,246,652
Passenger receipts	1,126,729	£1,115,127
Goods tonnage	1,298,231	1,370,446
Goods revenue	1,262,112	£1,178,408
Railway net receipts	(Dr.) 874,326	(Dr.) 613,037
Road net receipts	(Dr.) 2,471	16,393
Hotel net receipts	5,356	(Dr.) 1,264
Total net receipts	(Dr.) 838,024	(Dr.) 558,951
Fixed charges	107,780	116,333
Deficit	945,804	675,284
Debit bal. brought forward	972,246	296,962
Balance	(Dr.) 1,918,050	(Dr.) 972,246

There was an increase of £237,779 to £3,979,937 in gross receipts. Expenditure, excluding transfers to depreciation funds, increased by £643,155 to £4,542,934.

Coal prices were increased by the National Coal Board, and although less coal was used a greater expenditure was incurred. Oil and petrol prices were affected by increased State taxation. Prices of other supplies were Government-controlled, or their sources were Government-restricted so that non-competitive prices ruled. The company, with a view to meeting the increased cost, raised rates and fares by amounts representing 10·42 per cent spread over the year. Gross receipts, as a result, rose by only 6·11 per cent, showing, the report states, that this process yields diminishing returns.

After the decision of both Governments to acquire the G.N.R.(I.), the undertaking was required to adopt in rates of pay and conditions of service already existing in Coras Iompair Eireann, and the Ulster Transport Authority, both of which, comments the report, "are State organisations which required Government assistance to maintain those rates and conditions." The excess over obtainable receipts in the cost of day-to-day operation was thus largely the result of Government policy in various applications and it was both inevitable and appropriate that it should have to be met out of Government funds.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Point Operation by Hand-Generator

February 1

SIR,—The article appearing in your issue of January 30 on point operation by hand-generator on the Western Railway as being the first of its kind in India does not seem to be strictly accurate. As far as the writer is aware, the late Eastern Bengal Railway in 1937 introduced this method of point operation at five crossing stations on the Poradah-Rajbari section, involving a total of 10 sets of crossovers being worked by this method. The Bengal Assam Railway during 1943-44, when resignalling the Southern section and providing additional facilities at stations on the Ishurdi-Parbatipur section, introduced a further 10 sets of hand-generator operated points—two on the former section and eight on the latter. With the partition of India in 1947, a total of 18 sets fell within the territory of Pakistan, with two sets remaining in India.

It is clear, therefore, that the claim supporting the article is not accurate, unless, of course, it refers to this method of operation being the first installation of its kind since the partition of India. All the apparatus involved in the installations referred to above was supplied by Metropolitan-Vickers-GRS Limited.

Yours faithfully,

H. F. DENNISON,
Signal Engineer, Eastern Bengal Railway
(on leave preparatory to retirement)

Grindlays Bank Limited, 54, Parliament Street,
London, S.W.1

"Frosted Glass"

February 12

SIR,—In your February 6 issue you published under the above heading a letter from Mr. K. W. Haselden which drew attention to the advantage of double glazed windows in railway carriages.

In your comment on Mr. Haselden's letter you mention that it is not normal practice to fit them in this country. Although this is the case, I would like to point out that the ten new cars put into service by the Pullman Car Co. Ltd. for the "Golden Arrow" in 1951, were all equipped with double glazed windows supplied by Pilkington Brothers, St. Helens, Lancashire. Some three years before this, double glazed windows were also fitted to the two Pullman observation cars running in the "Devon Belle."

The double glazed windows provide improved heat insulation which in addition to the advantage of non-misting of windows in cold weather minimises the radiation of heat or cold from large areas of glass, either of which can cause discomfort to passengers occupying seats near windows. Another considerable advantage is that they effect a marked reduction in the noise normally transmitted to the interiors of the cars.

Yours faithfully,

N. JOHNSON
Chief Engineer

The Pullman Car Co. Ltd., Victoria Station,
London, S.W.1

Cross-Country Services

February 10

SIR,—If a result of the abolition of the Railway Executive is that we gain in local initiative and lose in overall national efficiency, a grave disservice will be done by this seemingly interminable squabble in Parliament over transport reorganisation.

Reasonable devolution would undoubtedly tend to greater local efficiency and a sounder relationship between the administration and the travelling public but there is a risk of it being carried too far. There exists an urgent need for even greater national coordination, especially in linking up the trunk lines.

Ponder the efforts of the poor traveller moving from Edinburgh to Wales or Bristol, or from Manchester to Norwich. An average overall transit speed of 50 m.p.h. between Glasgow and London drops to 25 or 30 m.p.h. over long-distance cross-country runs, with frequent changes and long waits in cheerless stations.

Why is there no "Calecambrian," if train titles count for anything? One portion would leave Edinburgh Waverley and the other Princes Street. The first would run *via* Newcastle and York to Leeds, Manchester and North Wales and the other *via* Carlisle to North Wales, connecting at Manchester Victoria - Exchange (No. 11 platform), with a suitable division at Chester for Shrewsbury, Hereford and Cardiff. It would have a timing of 5 hr. to Manchester, of 7 hr. to Llandudno and 9 hr. to Cardiff and link at Bristol with a good fast train to Exeter and Plymouth. A portion from Glasgow could run *via* Carlisle, Warrington and Chester.

We may be told that there is no public for such a train and that there already exists a suitable, effective and convenient service linking all these places. I would like to know where and when it is. I have looked in vain also for really effective development of other cross-country routes. Unfortunately the strong insularities of the nineteenth century still thwart efficiency here.

Give me local pride and strong public contact, but while retaining the pride let us get rid of the prejudice.

Yours faithfully,

B. NEWTON BROOKES

Vistabay, St. Hilary's Drive,
Deganwy, North Wales

Public Reaction to Railway Economies

February 15

SIR,—The remarks of Mr. John Elliot reported in your issue of February 13 that economies were saving £16,000,000 a year and the public benefiting to that extent will not bring much, if any, satisfaction or pleasure to the public, seeing that it is asked to pay higher tariffs.

In view of the adverse criticism of nationalised transport, the only effective and practical answer the country will understand and appreciate is to lower the fares.

Yours faithfully,

ROBERT W. LEWIS

Beth-El, 104, Leggatts Way, Watford

Replacing Branch Line Services

February 16

SIR,—When branch lines are closed to passenger traffic it is usually assumed, somewhat optimistically, that the alternative bus services provided will be at least as frequent as the withdrawn train services. This usually proves to be so in thickly populated areas but elsewhere the local population is apt to be left in the lurch for transport, as the following two examples in the North of England will reveal.

When the Kirkby Stephen - Tebay line was closed to passenger traffic, the basic service was two trains a day each way on six days of the week, but the bus service now provided runs only three days a week and not on Sundays. The withdrawal of the Morpeth - Rothbury passenger services has left a large stretch of country between Rothbury and Scotsgap with no public transport. So far no bus service has been provided despite the efforts of the Rothbury Rural District Council and a flood of letters to the Press.

Yours faithfully,

E. E. SMITH

Castle View, Stagshaw Road,
Corbridge, Northumberland

THE SCRAP HEAP

Mothers of Invention

Out of a total of 5,016 patents granted to women in a ten-year period, almost seven per cent of the grand total covered inventions dealing with various kinds of transportation. That added up to 345 separate inventions to keep the wheels of transportation turning. During this ten-year period a total of 89 patents, almost two per cent of the grand total covered mechanisms especially related to railroads. — From "Wheels," the journal of the American Car & Foundry Company.

Initial Meanings

Even in the best of the good old days railway punctuality was never 100 per cent. Some lines were notorious for the frequency of their late arrivals. The North Eastern of 50 years ago was so bad that its passholders called it the Never Early Railway; on becoming the L. & N.E.R. it changed its slogan to Late & Never Early. The Midland, whose third class stock was much more comfortable than the first class on many lines, was the Much Respected, but the London & North Western was the Lazy & Not Willing. Another unkind catch applied to the London Chatham & Dover, which was known by regular travellers as the London Smashem & Chuckem-over because of its ancient coaching stock. — From "The Manchester Guardian."

Down the Local Line

The lovers of the little railways of England, still reeling from the blow of the closing of the Canterbury-Whitstable line, which opened on May 3, 1830, will feel an added grief at the news that within the next few years the Isle of Wight may lose all its lines except that between Ryde and Ventnor. Nothing is yet official, but a few weeks ago the Merstone-Ventnor West branch was closed, and the hand of the State, properly zealous in the cause of economy, has been too busy at its work of pruning to allow any undue feeling of optimism to inflate the toy delights which wait at busy, self-important junctions and then go rambling off on their secret lines, own brothers to Chesterton's rolling, wayward roads. Too familiar is the news which tells of well-loved trains, their engines garlanded as for a sacrifice, their carriages packed, the station cheering, setting out on their last journeys. Today, all too regardless of their doom, the little railways puff . . .

The buses which replace them are doubtless efficient, but even the most friendly of conductors cannot give to his vehicle the same sense of corporate entity which belongs to the little train.

Yet the little railways seldom fail in punctuality and never in personal service. Although their duties on the whole are humble, they, too, have their hours of glory. Did not the miniature line from Bridport to West Bay, which boasted half-a-dozen goods wagons and

made the journey once in every twenty-four hours, carry Mr. Churchill when he attended the rehearsal of the Normandy invasion? And might not some similar honour befall any one of those whose familiar pleasure it is to put down a five-year-old child at one halt and pick up a crate of eggs at the next? — From "The Times."

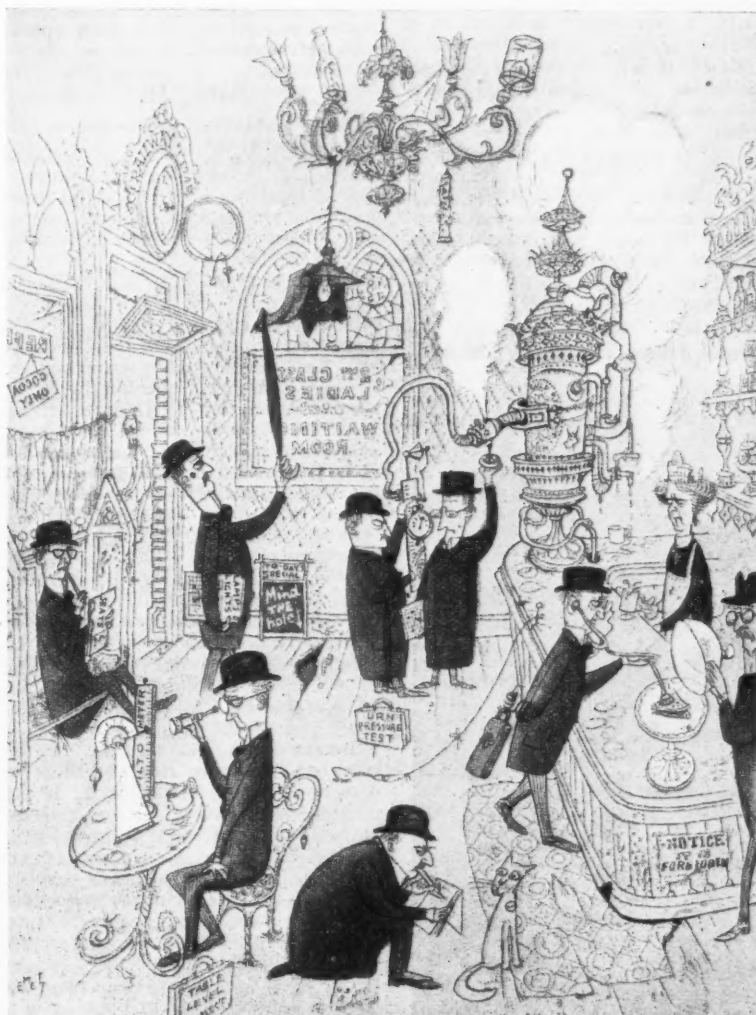
Home for Old-Timers

Some 250 citizens of Kirkwood, a suburb of St. Louis, U.S.A., have formed a non-profit-making educational corporation to run a Museum of Transport. Here, on a 54-acre site, says the *Monsanto Magazine*, they have assembled exhibits ranging from old locomotives, rolling stock, and horse trams to a library of 6,000 transport books and a picture gallery on the same theme.

Everything in the museum has been presented. Members of the corporation include doctors, lawyers, insurance men, estate agents, and—of course—railwaymen. All put in time acting as weekend guides for visitors and attending to the maintenance of the exhibits.

Comfortable Third Class

Third class accommodation on the Norwegian State Railways is now so comfortable that second class fares may have to be reduced, according to an Oslo newspaper. No immediate reduction is contemplated, says the Traffic Manager, for second class bookings are still heavy, but he admits that a party of British tourists travelling second class asked recently what excess fare they would have to pay to travel third class.



"British Railways do not feel complacent over the condition of some of their stations and equipment . . . They have asked each of the six Chief Regional Officers . . . to take in hand a special investigation . . ." (The Chairman of the Railway Executive)

[Reproduced by permission of the proprietors of "Punch"]

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

CANADA

Record Freight Tonnage

Freight transported by Canadian railways reached record totals in September and the first nine months of 1952. Revenue freight carried in the month amounted to 14,321,754 tons compared with 13,131,983 in September, 1951, and in the nine-month period totalled 120,117,690 tons (117,914,818). Domestic loadings increased in September to 11,133,099 tons from 10,016,100 a year ago. Imports for Canadian stations were up to 1,898,936 tons from 1,819,925, but in transit freight was slightly lower at 1,289,719 tons against 1,295,958.

Loadings in Newfoundland rose in the nine-month period to 983,208 tons from 837,163 a year earlier; in Manitoba to 6,091,232 (5,759,936); Saskatchewan to 11,514,380 (8,327,120), Alberta 9,929,456 (8,256,743), and British Columbia 8,649,068 (8,556,522).

PAKISTAN

Railway Training Centre

The Economic Commission for Asia and the Far East proposes to recruit Pakistani officers for a railway train-

ing centre which is being set up at Lahore. It is expected to be opened on August 15 this year, and will serve the entire region of Asia and the Far East. The main purpose of the centre is to train officers in modern practices and devices for efficient train operation. They will be drawn from countries of the E.C.A.F.E. region.

The Executive Secretary of E.C.A.F.E., at Bangkok, has invited applications for one director and five lecturers of whom the former, among other duties, will organise and co-ordinate the teaching and training activities of the lecturers, and supervise the installation and general planning of the physical facilities of the centre. The latter officers will give lectures on railway signalling, railway communications, regulation and control of train operation and movement.

BRAZIL

Rio Suburban Improvements

President Vargas has approved the Brazil-U.S. Commission recommendations for improving the Central Railway suburban services at Rio de Janeiro. The project, which involves a loan of U.S. \$16,600,000 from the World Bank and a local expenditure of £5,200,000, is to be carried out in five years. It provides for 100 new multiple-electric trains and improvements to permanent way and electric transmission system.

The Commission points out that in the zone served by the electric train service 2,400,000 persons reside or work in an area of 500 square miles; the population in this area has increased 50 per cent in the past decade, while the overall increase in the Rio Federal District is only 36 per cent; and 23,000 new dwellings now planned or building will result in a 6 per cent traffic increase. Most of the Central Railway suburban service is already electrified and the rest will be converted shortly. Because the plant is worn out, trains built for speeds of 60 m.p.h. are doing less than 20, and coaches built to accommodate 200 passengers are carrying 400.

Recent delays and accidents on the suburban lines have aroused public indignation and led, on January 22, to the resignation of Colonel Eurico Gomes, Director of the Central Railway, who pointed out that he could not obtain exchange cover for essential supplies and replacements. He has been succeeded by Senhor Jair Rego de Oliveira.

Mr. Ralph Budd, President of the Chicago Traffic Division, is assisting the Brazil-U.S. Commission in planning railway improvements in Brazil.

ITALY

Milan Underground Railway

The Milan City Council has unanimously approved a proposal for the construction of the first section of an

underground railway. It will connect some of the city's busiest centres, including Piazzale Lotto, Piazzale Piemonte, Piazzale Cadorna, Piazza Duomo, Piazza San Babila, and Piazzale Loreto. A future extension to Monza is envisaged. The construction of this first section will favour the development of the city towards the north-east and north-west.

Work on a second route which will afford connections with the Central Station and the southern suburbs will begin after the completion of the first route, though the construction of the interchange stations between the two routes is already included in the first stage of work.

FRANCE

S.N.C.F. Earnings

Operating receipts of the S.N.C.F. in 1952 amounted to fr. 390,829 million, an increase of fr. 60,472 million, or 18.3 per cent in comparison with 1951. Passenger traffic receipts were fr. 103,308 million, a rise of 23.6 per cent and freight traffic fr. 271,737 million, a rise of 15.7 per cent. Taking into account the increases in rates during the year, it appears that passenger traffic increased but freight traffic was slightly less. The provisional estimate of tonnage carried is 173,000,000 tonnes (177,000,000 in 1951 and 132,000,000 in 1938). The number of wagons loaded in 1952 was 14,039,665 (14,751,643 in 1951), a decrease of 4.8 per cent.

Self-Drive Car Hire

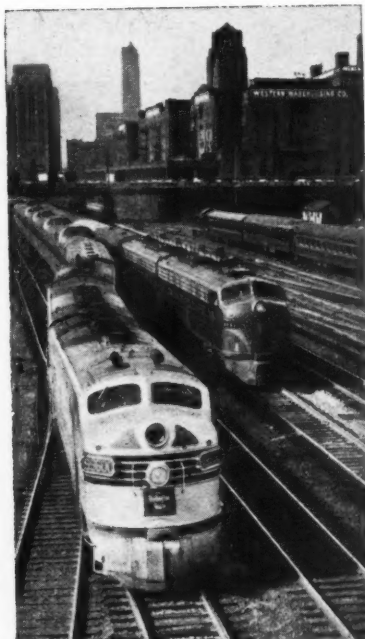
In our May 23, 1952, issue details were given of the scheme put into force by the S.N.C.F. for the hire of self-driven cars to the public. Since that time the arrangements have been considerably extended, and cars are now available at more than 70 centres. Passengers beginning a journey at any station on the S.N.C.F. can arrange to be met by a self-drive car at any of the towns covered by the scheme.

During the third quarter of 1951, when this facility was first made available, 9,632 hire-days were recorded; the corresponding figure for July to September, 1952, was 15,854 hire-days.

Inwards Seat Reservations

The large number of stations in Savoy from which return journeys begin has caused difficulties in seat reservation. It was, therefore, decided to set up central offices at which all reservations for journeys from this area concerned will be handled. Previously, allocations of seats were made to some 20 stations on a somewhat arbitrary basis, but this proved an unsatisfactory arrangement.

A single reservation office was found to be impracticable and three reservation centres have been established to serve three geographical zones: St.



Photo] . [M. Aubert
The westbound "California Zephyr" of the Burlington and (right) the eastbound Pennsylvania Railroad "Broadway Limited" leaving Chicago

Gervais-Le Fayet, Annemasse, and Chambéry. The first two are already working and the third will be opened later.

At the central office is a revolving drum composed of two circular sections, an inner section with 17 compartments containing details of first and second class seats and the outer section with 42 compartments handling third class reservations. Seven days' reservations are immediately available in the drum. The operators, wearing headphones and chest microphones, are located around the drum and are in telephone communication with all parts of the zone concerned.

Train diagrams are maintained only at the central office, and seats can be allotted only by the operator there. Reservation tickets are made out in duplicate by staff at the local station or ticket agency in accordance

with information supplied from the central office, one portion being handed to the passenger and the other being sent to the central office. Reservations can also be made by postal application.

A somewhat similar organisation has been in existence for some time for return reservations from stations on the Riviera.

U.S.S.R.

Gas-Generator Locomotive

The completion has been announced of an experimental gas-generator locomotive at the Kharkov factory for the construction of transport machinery. The locomotive, which is for main line service, is stated to be able to run long distances without refuelling. It is built in three sections, each mounted on two four-wheel bogies and the horsepower is

given as 2,000. The fuel consists of anthracite with a small admixture of liquid fuel.

IRELAND

Lough Swilly Railway Closure

The Transport Tribunal sitting in Belfast on February 6 granted the Londonderry & Lough Swilly Railway permission to discontinue its remaining rail services in Northern Ireland. Only 3½ miles between Buncrana (in Donegal) and Londonderry are situated in Northern Ireland. The Tribunal in the Republic already granted permission for the Donegal services to be closed down from January 1. It was stated that there were sufficient road freight vehicles to carry on the goods services and that the railway could be closed completely without prejudicing facilities between Donegal and Londonderry.

Publications Received

Ofof Banen 50 AR, 1902-1952 (50 Years of the Ofoten Railway). Oslo. Norwegian State Railways, Public Relations Department. 12 in. x 8½ in. 70 pp. No price stated.—Produced to mark the Jubilee of the Ofoten Railway, this attractive and well-illustrated book (written in Norwegian) describes the failure of an English company, between 1885 and 1889, to achieve the formidable task of building a line, rising to over 1,700 ft., 150 miles north of the Arctic Circle, and its subsequent completion, between 1898 and 1902, by the Norwegian State. Originally the most northerly railway in the world, it is still, since its electrification in 1923, the most northerly electrified line. The consequent development of Narvik from a community of 60 souls to the largest town in North Norway is described, and the illustrations showing the stages of its growth convey also the outstanding beauty of the surroundings. An interesting account is given of the difficulties during the war, the almost complete destruction of the railway, and the subsequent reconstruction and recovery. The line now carries 70 per cent of the freight traffic of the Norwegian State Railways, the yearly total of the iron ore conveyed from the Kiruna mines in Lapland having reached 8,000,000 tons. There is also a considerable tourist traffic, as the 26 miles of line are among the most beautiful in this land of magnificent railway scenery.

British Wood Preserving Association Convention.—The British Wood Preserving Association has issued a volume containing the full proceedings of the convention held at Cambridge on June 23-25 last year. Among the papers included is one on "Problems of Rail Sleeper Preservation in Australia," which was the subject of an editorial article in our August 15, 1952, issue. The discussions on this and all papers at the convention are included, together with the Chairman's résumé and com-

ments on the proceedings as a whole. Copies of the record are available from the Association, price 8s. 6d.

Renold Chain Wheels and Adaptors.—An illustrated leaflet depicting a standard stock series of plate wheels and adaptors for 8 mm. chain has recently been issued by the Renold & Coventry Chain Co. Ltd. A table is included showing normal horsepower of each type, which increase progressively from fractional to 2 h.p. with a speed range of from 160 to 5,000 r.p.m. Wheel and adaptor dimensions are shown in a diagram, co-related to a table for ease of ordering.

Wiggin Nickel Alloys—No. 18 of this publication from Henry Wiggin & Co. Ltd. includes a leading article dealing with the use of Monel stay-bolts in British Railways standard type locomotives. Other articles describe the Bristol Proteus aircraft engine and the Allen gas turbine in some detail, including some notes on development creep-testing of the Nimonic 80A blades. Further short articles describe uses of Monel in arc welding transformers, in pressure and vacuum recorders, and in steam traps. Copies may be obtained free of charge from Henry Wiggin & Co. Ltd.

Air Compressor Lubrication.—The Vacuum Oil Co. Ltd. has added the subject of air compressor operation and maintenance to its current series of technical manuals, by the issue of a new production, *Air Compressor Lubrication*. Its approach is essentially practical, as it is directed to the operating and maintenance engineer rather than to the designer or manufacturer. The theory of air compression, including such questions as the effects of altitude and moisture and the measurement of efficiency, is therefore briefly reviewed. In dealing with the practical aspects the air compressors are divided into two main cate-

gories; reciprocating compressors and rotary compressors. The latter category includes sliding vane, turbo, Roots type and various special classes of equipment. The book deals with the problem of lubrication, and provides a chart of oil recommendations for the main types of equipment. Special chapters are devoted to preventive maintenance, overheating, wasteful oil feed, and so on. The manual is illustrated with diagrams, many of them in two colours, and is available, free of charge, from the company's head office, or from its Divisions or Branches.

Summer Holidays in the British Isles.—The programme of Thos. Cook & Son Ltd. embraces all parts of the British Isles, including St. Mary's, Scilly; Sark; Stromness in the Orkneys; Bundoran in Donegal; and Glengarriff in the sub-tropical south-west of County Cork. There is a wide range of inclusive holidays and tours. A separate programme of coach tours in the British Isles organised by Thos. Cook & Son shows the remarkable variety of urban and rural scenery afforded by even a short motorcoach tour in these islands; the booklet contains some well reproduced illustrations and gives some information of general interest to intending travellers.

France Transport Service Limited.—The 1953 season programme of France Transport Service Limited, of 180, Piccadilly, London, W.1, offers a wide selection of holidays. Besides motorcoach and rail and coach tours covering nearly all parts of France, there are inclusive tours of Corsica, also Europa Bus tours to Barcelona, to Casablanca through Spain, and to other countries. A useful facility for holidaymakers and others is the self-drive car hire service. A separate leaflet gives details of specialised visits to France for various trades and professions which are arranged by France Transport Service Limited in conjunction with the Cité Club Universitaire, Paris.

From Timetable to Substations

Calculating the capacities of motive power and substations to maintain scheduled services on a given route

By Stephen A. Vincze, Dipl.-Ing., M.I.E.E.

THE starting point for the detailed design of any electrification scheme is the graphic timetable worked out by the operating department. It is their responsibility to decide the number, composition, speed and trailing weight of the trains, and to work out the operational programme; whereas it is the joint responsibility of the engineering departments (civil, mechanical and electrical) to provide the best available means of transport at the least possible cost. "Costs" mean first costs and operating costs.

Motive Power

Once the timetable has been tentatively fixed, the next step is to determine the type, weight, wheel arrangement, permissible axle loads and power of the locomotives and/or motor coaches.

Since the vertical and horizontal profile of the route is necessarily given, the ruling gradient and the maximum train weight (including the weight of the locomotive) determine the maximum tractive force (max. F) required, whereas the average gradient and curves determine the average tractive force (F_{av}). All forces are referred to the wheel rim or rail. The locomotive weight, not being yet available, must be estimated. It must be checked later with the required tractive forces to find out whether the adhesion on the ruling grade is adequate: (a) when running at the specified speed for the grade; and (b) when starting.

As the running speeds on the various sections are given, these together with the tractive forces determine the required rail h.p. of the locomotive on each section. The average tractive force together with the average running speed over the whole route gives the continuous rail h.p. of the locomotive.

Another check has now to be made in order to find out whether it is possible to instal the required continuous h.p. into the given locomotive weight, and modifications have to be made where required.

The next step is the examination of the proper gear ratio, which must be such that on the one hand the fastest average speeds can be maintained with the heaviest trains at the continuous rating; and on the other hand that sufficient tractive force still remains available at the maximum speed together with adequate tractive force to start on and to negotiate the ruling grade.

The ratio $V_c/V_{max} = 41\text{--}76$ per cent with modern d.c. motors, and 65–100 per cent with modern $16\frac{2}{3}$ and 50-cycle single-phase a.c. motors, where V_c is the speed at the continuous rating, and V_{max} is the maximum safe speed.

Having tentatively fixed the locomotive data, the characteristic curves are obtained from the manufacturers or—if not available—from similar locomotives. The next step is the calculation of the speed/time, distance/time, and current/time curves, and of the energy consumptions and power demands.

Characteristics

The basis of the electrical calculations is the speed/time curve. It should be calculated as accurately as possible for the whole route in both directions. In order to find out the worst possible case, the fastest possible runs should be aimed at. To the fastest times must be added a suitable percentage for "recovery time" based on traffic experience. The schedule times thus obtained will be communicated back to the traffic department, which can now finalise its timetable. A number of graphic methods is available for these calculations, e.g., those given in references (1) and (2) at the end of this article.

Simultaneously with the speed/time curves, the distance/time and the current/time curves are determined. The latter, when planimeted, give the average current I_{av} which, multiplied by the average line voltage U_{av} in the case of motors working on a "constant" voltage, yield the average power demand $P_{av} = I_{av} \cdot U_{av}$. The latter multiplied by the running time gives the energy consumption for each run.

The method, which is suitable for d.c. systems, can be taken practically to any degree of accuracy by appropriate choice of the section lengths. It is most convenient to take the distance between stops as one section. Alternatively, or as a check, the power demand and energy consumption may be calculated with at least the same accuracy from the rail h.p. This method is more convenient for motors having variable-voltage control, e.g., with a.c. systems.

The next step is to check the heating of the traction motors. Heating depends on the R.M.S. current square. It can be readily determined from the I^2t curve. I = motor current, t = time. Maximum heating of the traction motors, being dependent on I^2 , will usually occur on the maximum gradients, where speeds are comparatively low, and will not necessarily coincide with the maximum power demand. The heating of the traction motors must be checked accurately for each line section, with due consideration of additional heating by electrical braking—if any—and must not be averaged over the whole route.

In accordance with the 1950 I.E.C. rules, the temperature rise of the armature windings must not exceed 120°C .

with class "B" insulation at 25°C . ambient temperature. Should the motors exceed the maximum permissible temperature on any one section, then:—

- (a) The gear ratio must be reduced.
- (b) The motor h.p. increased, or
- (c) Both, gear ratio and motor h.p. altered.

The opposite of (a) and (b) is the case if the motor remains too cool, which is an indication that it is over-dimensioned and not fully utilised.

Contact Line Loading

Calculation of the electrical loading of the contact line system may be carried out by different methods, all of which lead to more or less the same result. They are all based on the adding up of the various train loads occurring at the same time. Whatever method is used, however, ultimately the loads must be averaged out for a certain period, conveniently for one hour, though any other time interval may be considered.

Whether the load curves of all trains are added up first and then integrated over one hour, or whether the individual load curves are first integrated over one hour and then added up is immaterial. However, the latter method is much quicker and safer.

Having determined the energy consumption of each train between consecutive stops, the energy consumption is obtained for each section of the route by counting up the number of trains which are on the particular section within one hour (see the graphic timetable), and adding up their energy consumptions. Thus is obtained the total energy consumption in kWh, or in other words, the 1-hour sustained power demand P_1' at the contact wire in kW. The fact that some of the trains are only partly in the considered section during the investigated time interval, is taken into account by the "distance factor" f_d as indicated in Fig. 1.

$$f_d = D'/D \text{ where}$$

D' = actual distance covered by the train within the considered time interval (conveniently one hour);

D = total length of the section (conveniently the distance between two stops);

$f_d = 1$ if the train is entirely in the section during the considered time interval; and

$f_d < 1$ if the train is only partly in the section during the considered time interval.

As a numerical example; on a 6.5 route-mile double-track section of a certain 1,500-volt d.c. electrification, 26 trains are scheduled between 7 and 8 a.m. (total in both directions). Of the

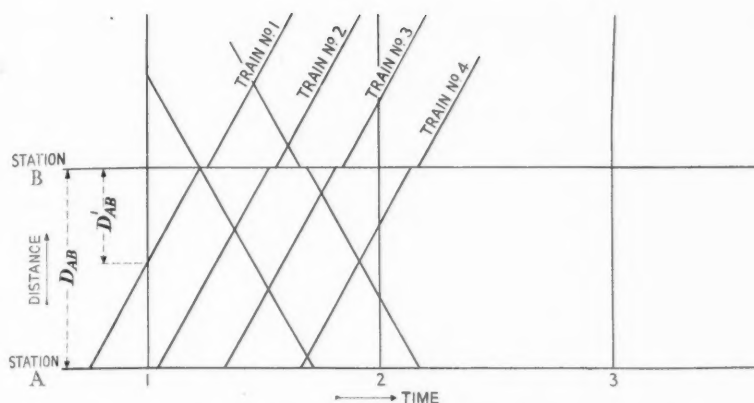


Fig. 1—Determination of distance factor. For Train No. 1 between A and B this is D'_{AB}/D_{AB}

above trains 18 are entirely in the section during that time and consume a total of 2,159 kWh; the other trains are only partly in the section and their energy consumption works out as shown in Table I.

TABLE I

No. and make-up of trains	Direction	W' (kWh)	f_d	$f_d \cdot W'$ (kWh)
1—MU 9/3 ...	"Up"	149	0.82	122.0
1—" ...	"	149	0.47	70.0
1—" ...	"	149	0.0845	12.6
1—" ...	"	149	0.265	39.5
1—LP ...	"	140	0.48	67.2
1—MU 3/1 ...	"	49.6	0.81	40.2
1—MU 2/1 ...	"Down"	40.2	0.796	32.0
1—MU 7/3 ...	"	130	0.0965	12.5
8 trains, total	—	955.8	0.415	396.0

Where:—

W' = Energy consumption of one train over the whole section, referred to the contact line at the pantograph, excluding train lighting, train heating, and auxiliaries;

f_d = Distance factor, as defined above;

$f_d W'$ = Energy consumption of one train over the distance D;

MU 9/3 = Multiple unit train consisting of 9 coaches, three of which are motor coaches

MU 7/3 = Ditto, consisting of 7 coaches, 3 of which are motor coaches

MU 3/1 = Ditto, consisting of 3 coaches, 1 of which is a motor coach

MU 2/1 = Ditto, consisting of 2 coaches, 1 of which is a motor coach

LP = Locomotive-hauled passenger train

Thus the total energy consumption on this section works out at

$$\Sigma W' = 2159 + 396 = 2,555 \text{ kWh}$$

(referred to the contact wire at a mean contact wire voltage of 1,350 V).

Since the arbitrarily chosen time interval was one hour in this instance, the 1-hour sustained power demand is also 2,555 kW.

The 1-hour sustained power demands for the other sections are obtained similarly. Sometimes it is possible to carry out this calculation for the peak traffic hours only, but often it will be necessary to work out the 24-hour load curves.

The power required for train lighting, train heating, and auxiliaries must be added to the above figures separately. Thus are obtained the 1-hour sustained

power demands P_1'' on the various sections, referred to the contact wire, including train lighting, heating, and auxiliaries.

With the electrification taken for the example P_1'' was found to amount to

$$P_1'' = (1.14 \text{ to } 1.18) \cdot P_1'$$

Dividing P_1'' by the lengths D_{ab} , D_{bc} , etc., of the various sections we obtain the linear power densities—

$$P'' = P''/D \text{ kW./rM}$$

Working out and plotting these for all sections of the route for every hour of the day, we finally obtain the 24-hour specific section load curves referred to the contact wire. They are entirely independent of the substation spacing and can be drawn as indicated in Fig. 2, where the anticipated substation spacings S are also indicated. The latter must be chosen with due regard to voltage drops, short circuit currents, interference with communications circuits and to substation plant utilisation.

With the substation spacings fixed, the resultant section loads P''_{1a} , P''_{1b} , etc., between substations can be determined as indicated on Fig. 2. Thereby:—

$$P_{1a}'' = p_{1ab} \cdot d_1; P_{1b}'' = p_{1ab} \cdot d_2; P_{1c}'' = p_{1bc} \cdot d_3; P_{1d}'' = p_{1bc} \cdot d_4$$

and so on.

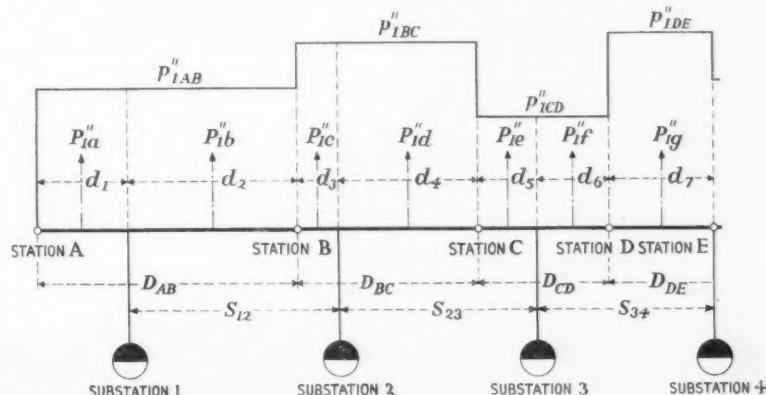


Fig. 2—Determination of the substation loads

The 1-hour sustained substation loads will be obtained from the resultant section loads P''_{1a} , P''_{1b} , P''_{1c} , etc., by any of the established methods, preferably by means of the current/moment method. As an example, for substation No. 1 on Fig. 2 we obtain:—

$$P''_{1ss} = \frac{P''_{1b}(d_3 + \frac{d_3^2}{2}) + P''_{1c} \cdot \frac{d_3}{2}}{S_{12}} + P''_{1a}$$

For intermediate substations the loads from the left- and right-hand side sections of the line must be calculated separately and then added up. The calculation gives the 1-hour sustained substation loads excluding trolley wire losses which must be added separately. They may be estimated at, say, 10 per cent of the maximum one-hour sustained section load with d.c. railways and at approximately one third this value with single-phase a.c. railways.

The maximum 1-hour sustained substation load including trolley line losses is for all intents and purposes the continuous rating for which the substation and the trolley line equipment must be laid out.

However, both substations and overhead contact system must be able to carry the impulse peak loads $\max P$ as well and their short time overload ratings should be chosen accordingly. The latter may be determined either by:—

(a) Estimating from the graphic timetable the trains starting at the same time and taking into account the power drawn by them when starting.

(b) Using the impulse peak factors $f_{p1} = \max P / \max P_{1h}$ or $f_{p24} = \max P / \max P_{24}$ derived from statistical curves based on actual field experience.

$\max P$ = impulse peak power, kW.

$\max P_{1h}$ = max. 1-hour sustained power demand, kW.

$\max P_{24}$ = max. 24-hour sustained power demand, kW.

(c) Using either method and checking it by the other one.

Impulse peak factor curves have been published on various railways by several authors.⁽³⁾⁽⁴⁾ They are usually given as

a function of the 1-hour sustained power demand or of the 24-hour sustained power demand or as a function of the weekly or of the daily energy consumptions. Upper and lower limit curves are represented as a rule with the measured values superimposed. With the appropriate values taken from these curves the impulse peak loads of the substations and of the whole system may be readily calculated⁽⁸⁾ :—

$$\max P_{ss} = f_{p1} \cdot \max P_{1ss} \text{ or } \max P_{ss} = f_{p24} \cdot \max P_{24ss}$$

as the case may be, where :—

$$\begin{aligned} \max P_{ss} &= \text{substation impulse peak load} \\ \max P_{1ss} &= \text{max. 1-hour sustained substation load} \\ \max P_{24ss} &= \text{max. 24-hour sustained substation load} \end{aligned}$$

The method is applicable to either a.c. or d.c. traction systems and if properly carried out will closely agree with subsequently measured values. For example,

it may be found that for a certain mercury-arc rectifier substation the maximum 1-hour sustained load works out at 3,400 kW. and the corresponding impulse peak factor at 3.5. We obtain the substation impulse peak load—

$$\max P_{1ss} = f_{p1} \cdot \max P_{ss} = 3.5 \times 3,400 = 11,900 \text{ kW.}$$

With mercury-arc rectifiers having an impulse overload capacity of 300 to 400 per cent rated load, the rectifier power to be installed should be 11,900/(3 to 4) = 4,000 to 3,000; say 3,500 kW. excluding standby.

Adding to the above 25 to 50 per cent for standby, and taking into account the average yearly loading of the plant and the standard equipment sizes available, it will be found that installation of $P_i = 3 \times 1,500$ kW. rectifier power will be satisfactory, giving under normal operating conditions a rectifier impulse peak factor of 11,900/4,500 = 2.64; and a plant

utilisation factor of 3,400/4,500 = 0.76, both of which are reasonable.

REFERENCES

- 1—A. Schwaiger : "Elektromotorische Betriebe." (Walter de Gruyter & Company, Berlin, 1922)
- 2—A. Morris Buck : "Electricity in Transportation" (Standard Handbook for Electrical Engineers, 7th Ed., McGraw-Hill Inc., New York 1941)
- 3—Wechmann, Krohne, Mengo, Schieb, Spennrath and Willenberg : "Die Bedeutung der Elektrisch Angetriebenen Verkehrsmittel im Rahmen der Gesamtversorgung eines Wirtschaftsgebietes" (Gesamtsbericht, Weltkraftkonferenz, Teiltagung Wien, 1938, Vol VI)
- 4—H. Habich : "Das Verhältnis zwischen Höchst- und Mittelleistungen und seine Schwankungen beim Elektrischen Betrieb der Schweizerischen Bundesbahnen" (Gesamtsbericht, Weltkraftkonferenz, Wien, 1938, Vol VI)
- 5—A. Vincze : "The Present State of Main-line Electrification" (N.Z. Engineering, April 10, 1948)
- 6—S. A. Vincze : "Economics of Long-Distance Electrification" (The Railway Gazette, December 1, 1950)
- 7—S. A. Vincze : Hutt Valley Electrification. Energy Consumption, Power Demand, and Substation Rating: Report No. 57 to the Electrical Engineer, New Zealand Railways, March, 1950 (unpublished)
- 8—S. A. Vincze : Wellington-Paekakariki and Welling-ton-Johnsonville 1,500v. d.c. System. Survey of the Substation Loads. Report No. 66 to the Electrical Engineer, New Zealand Railways, May, 1950 (unpublished)
- 9—S. A. Vincze : Auckland-Paekakariki Electrification. Substation Load Curves 16½ cycles a.c. Report No. 61 to the Electrical Engineer, New Zealand Railways, April, 1950 (unpublished)

Freight Working with Electric Locomotives

Experience on E.R. Wath—Dunford Bridge line

OPERATING conditions at the present time for the Bo + Bo locomotives working freight traffic on the first stage of the Eastern Region Manchester-Sheffield-Wath electrification do not give a balanced picture of what may be expected from the complete scheme. The electrically-hauled goods trains still have to work in with steam services, both goods and passenger, between Barnsley Junction and Dunford Bridge, which limits full use being made of their capacity for acceleration and speed with heavy loads. Experience has shown, however, that when drivers are able to notch up to full parallel a speed of 30 m.p.h. is easily maintained up the general ruling gradients of 1 in 130, single-handed with trailing loads of 750 tons compared with 12 to 15 m.p.h. with steam traction.

The monthly *British Transport Commission Statistics* have shown a stock of 51 locomotives on this section, but in fact only 24 are used for working traffic, of which four are spare. The remainder are at Dukinfield awaiting later stages of the scheme, but as they are moved intermittently to keep them in running order, they are not shown in the statistics as being in store. From the figures alone, therefore, a misleading impression may be gained of operating efficiency.

Maintenance Periods

Locomotives at Wath work for three days without going back to the shed for maintenance; the three-day inspection then carried out takes only about 1½ hr., and is completed between turns of duty. A 25-day inspection, taking about 7 hr., is the next normal maintenance procedure, and is arranged so that one locomotive is undergoing it each day. Usually the locomotive will

also be in traffic at some time on the day of this inspection. Hence the locomotives in the active group have an availability of the order of 95 per cent.

Running experience has shown the severe conditions to which the air filters in the locomotives are exposed by grit and dirt in the atmosphere and the exhaust of the traction motor cooling fans tends to disturb many years' accumulation of dust on the track and this in turn may find its way into the machinery compartments by the suction of the fans.

This also affects the temperature in the driving cabs by causing draughts as the resistance of the filters rises, which is of considerable importance on this very exposed section of line. Braking is heavy on the falling gradients and metallic brake block dust is very detrimental. To avoid the danger of flash-over through this metallic and other dust, modifications are being made in the filtering and ducting system through which the cooling air passes. These alterations account primarily for engines recorded as under repair and of course the work is non-recurrent and not directly connected with maintenance caused by wear and tear.

The difference between handling a steam and an electric locomotive is emphasised on a route such as this, where various factors combine with the heavy loads and steep gradients to make slipping likely. A motorman notching back to check wheelspin may remain long enough on resistance notches to cause overheating, because it is easy to forget that the action corresponding to reducing tractive effort in a steam locomotive by partly closing the regulator, involves in electric traction passing heavy current through rheostats with a limited time-rating. At present a driver notching

back must return his controller to "off" and then notch up again, passing through the series notches on which the whole of the motor current flows through the resistances in series. Modifications are now being made to the wiring to enable a motorman to notch back directly from full parallel to one of the preceding notches on which the resistance is connected in two parallel branches.

Good Riding Qualities

No major mechanical troubles have arisen and the riding of the locomotives is excellent. At first some deformation was experienced in the bogie pivots, but the predisposing cause has been removed and the steel pivot castings are being replaced by forgings. It is inevitable that certain improvements should be suggested by operating experience, and that some of them should involve trial and error before the best solution is found.

The summary of events to date presented in this article is a background against which the monthly operating statistics should be studied. Comparative schedules for steam and electric trains over the Wath-Dunford Bridge section were quoted in our January 23 issue. The working of the heaviest loads up the 1 in 40 of Wentworth bank with two locomotives at 17-18 miles per hour may be set beside the previous use of four steam locomotives (or three if one of them was the ex-L.N.E.R. Garratt). Moreover, the electric banker runs through from Wath to Barnsley Junction (Penistone) and does useful work on its return trip by heading an eastbound train to assist with the regenerative braking and thereby obviating the necessity to stop at West Silkstone to pin down brakes.

French National Railways Co-Co Locomotives

In future construction for Paris-Lyons express services power-bogie locomotives will replace the 2-Do-2 class

AN increasing number of main-line express duties between Paris and Lyons is being taken over by the new 4,800-h.p. Co-Co locomotives of the French National Railways, which began going into service last summer. These machines, numbered 7101 to 7153, are being built by the Société Alsthom and are closely similar to that company's two prototypes, Nos. 7001 and 7002. Some particulars of the production series of these 53 locomotives are given below:—

Length over buffers	... 62 ft. 1 in.
Maximum width of body	... 9 ft. 9 in.
Height with pantographs lowered	... 13 ft. 10 in.
Bogie wheelbase	... 15 ft. 10 in.
Total wheelbase	... 46 ft. 6 in.
Weight in working order	... 106 tonnes
One-hour rating	... 4,800 h.p. (34,618 lb. T.E. at 50 m.p.h.)
Continuous rating	... 4,400 h.p. (30,800 lb. T.E. at 51.5 m.p.h.)

Body and bogie frames are of all-steel construction with spot or arc welding throughout. The body is built up as a tubular girder in which every element, including the steel sheet side walls, contributes to withstanding vertical and longitudinal forces. In this way a high degree of vertical rigidity has been achieved as well as resistance to buffing shocks.

All important parts of the bogie frames, such as side members, bolsters, and end cross-members, are prefabricated and assembled by welding.

As in the prototype locomotives, the connection between the body and each bogie takes the form of two swing-links pivoting on cone-shaped rubber seatings, the bogie seatings being in the bolsters between the traction motors. Two spring members act transversely to restore each pivot to the vertical after displacement when negotiating a curve or as a result of lateral forces acting on the body. The maximum movement allowed to the swing links enables curves of 40 ch. radius to be negotiated.

Method of Suspension

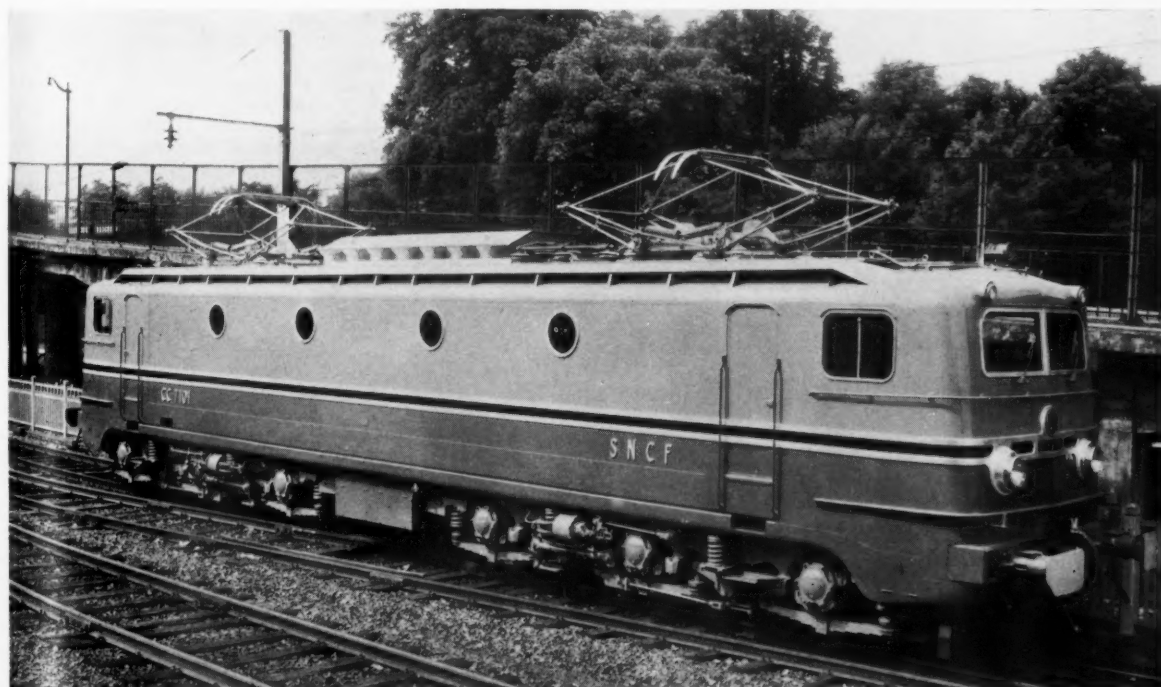
A description, with diagrams, of the characteristics of the pivoting system appeared in our May 12, 1950, issue, in connection with the two prototypes. The new locomotives differ from the prototypes in their suspension only in having four instead of two side bearers on each bogie. A similar method of mounting the Athermos axleboxes without normal guides or other rubbing surfaces has been adopted, the boxes being supported by short horizontal struts pivoted at their ends on Silentbloks so as to have both vertical and some lateral movement. An internal spring in each axlebox deflects if a lateral force reaching 5 metric tons acts on the axle and limits the force on the rail to that value for a



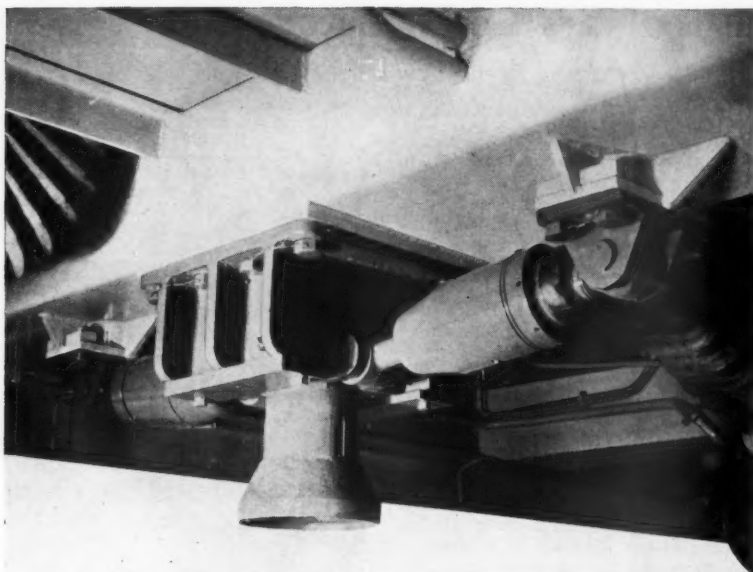
Driver's control desk and instrument panel

sideways movement of 0.4 in. in either direction.

Extensive use of rubber in parts of the assembly where there is a pivoting



French National Railways 1,500 V. d.c. Co-Co locomotive No. 7101 built by Alsthom



View under body of one of the swing-links, part of the pivoting system, that rest on cone-shaped rubber seatings in the bogie bolsters

action, results in a saving of maintenance and lubrication requirements. In addition to the applications mentioned already, rubber pads have been provided in the primary suspension at the ends of the laminated springs and permit the slight oscillations which normally are provided for by the equalisers. Being free from the necessity for lubrication and not subject to wear, the pads increase the flexibility of the suspension system and at the same time provide a valuable damping effect.

The six traction motors of the locomotive can be connected in three groupings with five weak-field steps in each. Each weak-field running notch is reached through an intermediate step designed to ensure an even graduation of tractive effort when notching up. An

extended degree of field-shunting has been made possible by the use of fully-compensated traction motors, the reductions in the five steps being 24.5, 40.5, 54, 65 and 73 per cent.

The motor groupings are six in series, two parallel circuits of three motors in series, and three parallel circuits of two in series. There are 40 full-field notches, 18 in series, 12 in series-parallel and 10 in parallel; and 18 economical running notches.

Individual electro-pneumatic contactors are used for the resistance switching but transitions are controlled by three groups of four cam-operated contactors. The reverser contacts are also cam-operated by electro-pneumatic servo-motors. Field-shunting is effected by means of diverter resistances in series

with inductive shunts. The power, auxiliary, and train-heating circuits are protected by a high-speed circuit-breaker.

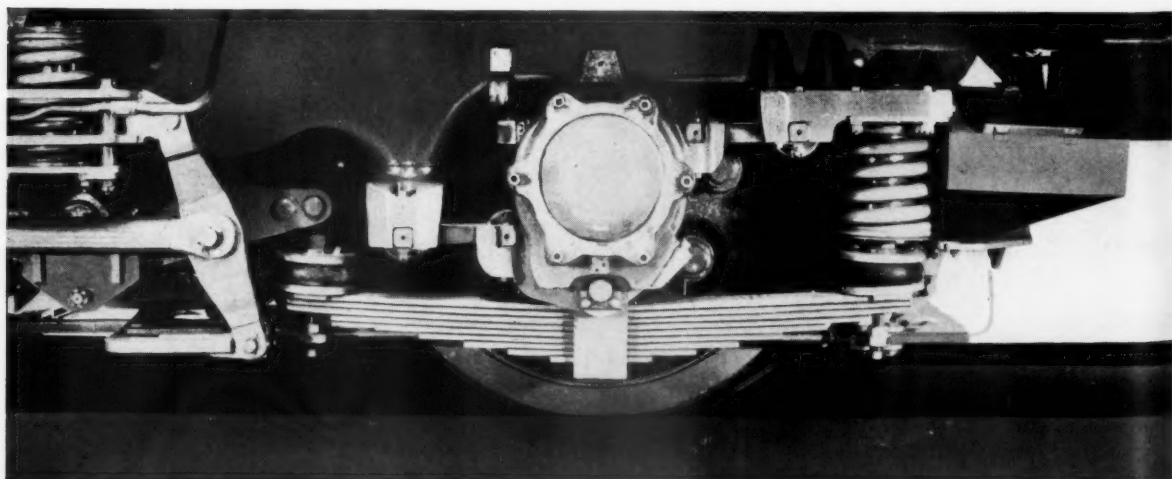
Three fully springborne traction motors are carried in the frames of each bogie and have a bilateral drive through resilient gearwheels to a quill shaft. A gear-driven pump is provided for lubricating the quill bearings. The flexible connection between the quill and the driving axles is of the Alsthom type with floating ring and links mounted on Silentbloks. The gear ratio is 1:2.606. Each motor complete, but without gears and gearcase, weighs 3 tons 14 cwt.

Performance

A wide range and even graduation of tractive effort from notch to notch results from the use of motors running at half the line voltage and suitable for an advanced degree of field weakening. The performance characteristics enable the locomotive to handle trains of varying weights and speed with efficiency and economy. Passenger trains weighing between 500 and 700 metric tons can be hauled on the level at 93 m.p.h. without using minimum field or exceeding the continuous rating. In series-parallel, full field, goods trains of 1,300 or 1,200 metric tons can be worked up gradients of 1 in 200 and 1 in 125 respectively within the continuous rating at speeds between 30 and 37 m.p.h.

If the minimum field notch is used, the locomotive will haul a 700-tonne passenger train at 99 m.p.h. on the level, 87 m.p.h. up 1 in 200, or 82 m.p.h. up 1 in 125. These characteristics place the new Co-Co locomotives on a par with the most powerful designs of other wheel arrangements at present in service on the French National Railways.

The electrical equipment is mounted in several blocks arranged in the centre of the locomotive so that room is left for corridors connecting the cabs on both sides of the body. Apertures in the roof enable any assembly to be lifted



Axlebox supported by links with Silentbloc mountings to allow vertical and transverse movement

out, complete with its wiring, for maintenance. The central apparatus block contains the starting resistances, main contactors, transition cam groups, and overload relays. Separate blocks housing the contactors and resistances of the shunt-field circuits are mounted at each end of the main assembly and the inductive shunts for the same circuits also form individual units.

The motor-blower groups are carried under the end roof sections, which also support the pantographs. Air is drawn in through side openings and the output from one blower in each group flows

over the starting resistances before escaping to atmosphere through the central roof section. Flexible conduits convey the cooling air to the motors.

No. 7101, the first locomotive in the new series, ran over 29,000 miles during last August, as reported briefly in our January 16 issue. The same locomotive hauled the train by which the party of travel agents and technical press representatives returned from Lyons to Paris after their visit to railway and hydro-electric installations in France last October (see our October 17 issue). On this occasion a defect in the carriage elec-

trical heating system made it necessary to haul a steam-heating vehicle from Lyons to Dijon but this was detached at the latter point and the train left there for Paris 5 minutes late; hauling a load of 717 metric tons, the locomotive passed Blaisy Bas, at the top of 16.4 miles mostly at 1 in 125, in 18 minutes. The first 62 miles of the run were completed in 44 min., an average of 84.5 m.p.h., and the whole journey of 195.3 miles to Paris was made in 2 hr. 28 min., as against 2 hr. 37 min. allowed in the timetable, the average speed being 79.1 m.p.h.

New Bo-Bo Locomotive for German Federal Railway

First of mixed traffic prototypes

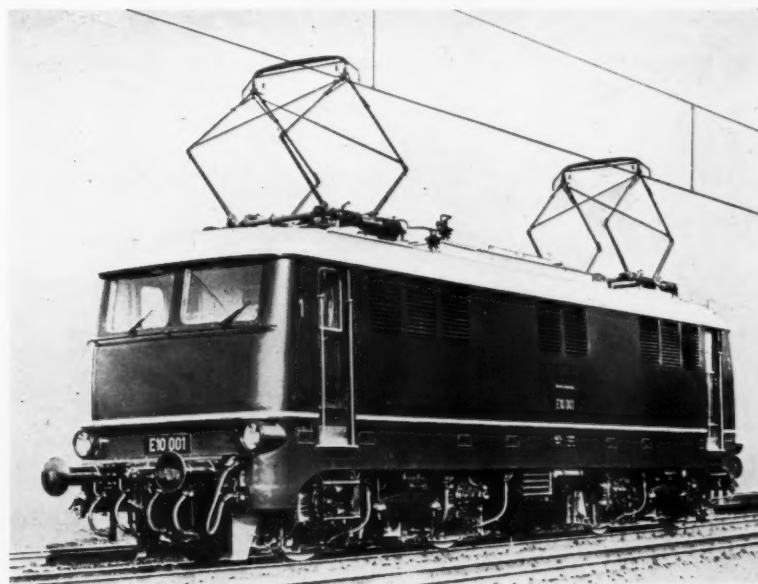
THE locomotive illustrated is one of five prototypes being built for the German Federal Railway in order to provide operating experience on which a new mixed traffic design will be based. It has the Bo-Bo wheel arrangement, and weighs 83 tonnes in working order. The builders are A.E.G. and Krauss-Maffei.

Weight in working order is 83 tonnes, and the locomotive measures 52 ft. 10 in. in overall length. Its ratings are: 1 hour, 4,580 h.p. at 60 m.p.h.; and continuous, 4,400 h.p. at 61½ m.p.h. Maximum speed of the locomotive is 81 m.p.h. The electrical supply is at 15,000 V., 16⅔ cycles, single-phase.

No. 10001 is the first of the five prototypes, and went into service towards the end of last year. Among the performance requirements are the haulage of a goods train of 1,300 tons at 44 m.p.h. up 1 in 200 without exceeding the continuous rating, and the ability to maintain 56 m.p.h. with a 700-ton passenger train up a gradient of 1 in 100. Provision is made for operating two locomotives coupled in multiple-unit.

The transformer has 18 secondary tapings for motor voltages between 65 and 616 volts, and heating circuit tapings at 600 and 800, or 1,000 volts. It is rated at 2,750 kVA., and weighs some 9.5 tonnes.

Fine control of acceleration is provided. When a notch is selected on the driver's handwheel, the control mecha-



German Federal Railway "E10" class mixed traffic locomotive

nism advances automatically to the desired setting. Roller-type contacts have been used in place of the previous camshaft, the equipment weighing only some 11 cwt. as compared with 1 ton 1 cwt. in the case of the camshaft controller.

Intermediate steps are provided be-

tween notches 1 and 13, so that in all the control system provides 30 notches. The traction motors are 14-pole force-ventilated series machines, weighing 4 tons each. Two motor-blowers are installed, each serving one pair of traction motors. All auxiliary motors operate at 200 V., 16⅔ cycles.

FUTURE FRENCH ELECTRIFICATION.—It is expected that electric traction will be introduced between Lyons and Culoz by the end of this year, thus connecting the hitherto isolated Culoz-Modane electrification with the electrified Paris-Lyons main line. Conversion from Macon to Ambérieu will eventually permit the S.N.C.F. to implement its policy of working trains from Paris to Modane over the main line as far as Macon, instead of diverging at Dijon, and will enable electric locomotives to be

used throughout because Ambérieu is on the Lyons-Culoz line now in course of electrification. Priority was given to the Lyons-Culoz scheme because reconstruction of the bridge over the Saône at Macon on the line to Bourg and Ambérieu will be necessary for this route to handle heavier traffic.

ELECTRIC TRACTION IN NORWAY.—Work is in progress on conversions that will bring the electrified mileage of the Norwegian

State Railways up to 815, or about 30 per cent of the system, enabling 60 per cent of the traffic to be worked by electric traction. A scheme for electrifying a further 715 miles has been drawn up. Savings in cost of power as compared with coal were put at about 22 million kroner a year when the electrified mileage in operation was 565. Calculations have shown that savings through electric working will pay and amortise the capital invested in fixed installations to the extent of 12-13 per cent.

Shunting Locomotives for the South African Railways

*German-built engines of 25,600 lb.
tractive effort for the 3 ft. 6 in. gauge*

IN September last year Fried. Krupp Lokomotivfabrik made the initial deliveries against an order for 100 shunting engines for the South African Railways, and shipments have continued since then at the rate of eight to ten each month. The locomotives are designated "S2" Class, and are designed to the requirements of the railway administration. They are for the 3 ft. 6 in. gauge, and designed to negotiate curves of 175 ft. radius.

Boiler Design

The boiler barrel has a maximum diameter of 4 ft. 8 in. and is of riveted construction, the longitudinal seams being connected by butt joint double strap riveting. The circumferential seams are secured by a double row of rivets, otherwise single riveting is used. The plates of the barrel and firebox

shell are $\frac{7}{16}$ in. thick, and of basic open-hearth steel.

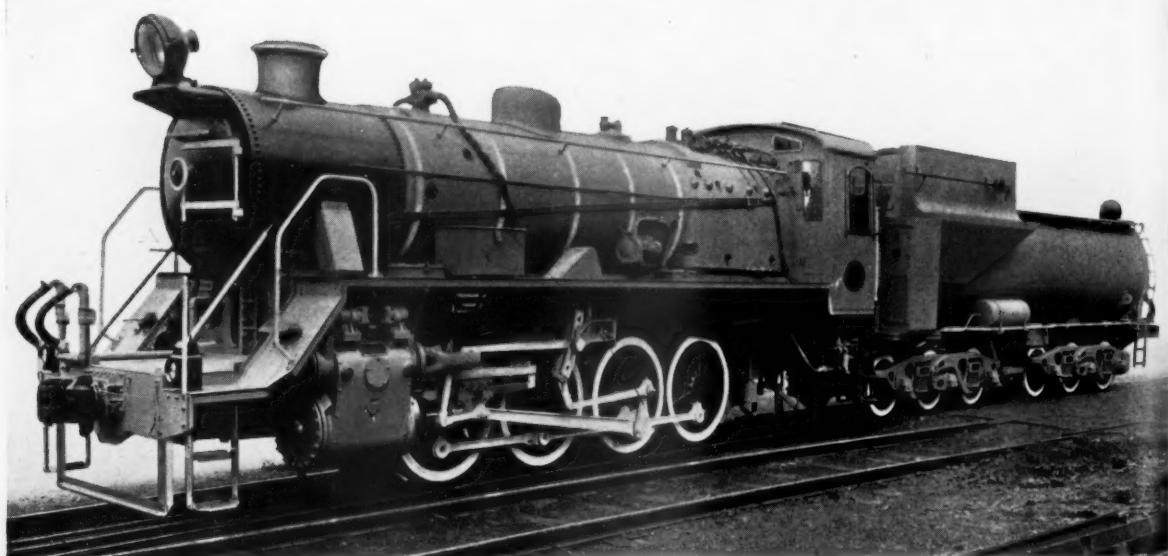
The inner firebox is completely welded and of non-aging steel, Izett II brand, having a tensile strength of 26-37.1 tons per sq. in. The thickness of the inner firebox wrapper and the firebox tube plate are $\frac{3}{8}$ in. and $\frac{5}{8}$ in. respectively. The rigid oversize staybolts, $\frac{7}{8}$ in. dia. by 1 ft. 11 in. long, are screwed-in and riveted on both sides, while the flexible oversize staybolts are riveted to the firebox plate, also the rigid and flexible crown stays; the cross stays are flexible.

As an innovation on the South African Railways, in ten of the boilers the water space and also crown stays were made without threads, and were welded into the plates of both inner and outer fireboxes. The header is of the Melesco type supplied by the

Superheater Co. Ltd. On the firebox side the 18 large tubes of 5½ in. o.d., and the 95 small tubes 2 in. by 11 s.w.g. thick, are fitted with copper ferrules, expanded, beaded, and welded. A double-seat, saturated steam valve regulator is fitted in the dome, and a three-tone steam whistle is fitted horizontally in the steam manifold.

Fittings include a steam outlet valve, Ross pop safety valves, Dewrance water gauges, and a scum cock fitted on the firebox shell back plate. Other fittings on the engine include an Everlasting type drain valve, two Gresham & Craven, No. 10, non-lifting injectors, and a Wakefield hydrostatic lubricator.

The grate has been designed for burning hard coal, and is fitted with a steam-operated rocking grate, and a hand-operated drop grate. The fire-door is of the sliding type and of stan-



South African Railways "S2" class shunting engine of 25,600 lb. tractive effort

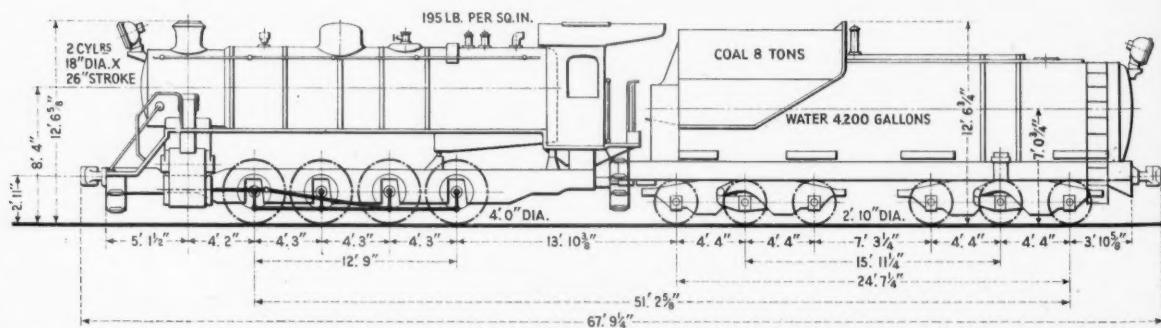


Diagram of principal weights and dimensions

ward design. The ashpan is fitted to the locomotive frame, and air is admitted from the sides through a free space between the ashpan and the foundation ring. The smokebox is self-cleaning with a corresponding design of spark arrester. The boiler barrel and firebox shell are fitted with asbestos mattresses, secured by lagging, the bands being of stainless steel.

Engine Particulars

The two rolled-steel bar frames are finished to a thickness of $3\frac{1}{2}$ in. and are secured by robust steel castings. The saddle casting is in two sections, the cylinder barrels being fitted with replaceable cast-iron liners. Standard type piston valves are fitted; by-pass and snifting valves are fitted to the cylinders.

The valve motion works on the Walschaerts-Huesinger system, and is operated by steam reversing gear. The cast-iron piston is designed as a flying piston, and the double-type slide bars are of natural hard steel, as are also the driving and coupling pins. The tyres of the driving and coupled wheels are of acid open-hearth steel, and to enable the engines to negotiate curves of 175 ft. radius the driving axle has no wheel flanges, while the second coupled axle has a side-play of $\frac{1}{4}$ in.

Special attention has been given to the balancing of the masses, the rotating masses being compensated 100 per cent, and the reciprocating masses by about 33½ per cent, the counterweights

in the driving wheel set being lined with lead. The axleboxes are fitted with adjusting wedges and are of gunmetal lined with whitmetal; with top and bottom lubrication.

The horn stays are forged of high-grade, chrome-vanadium steel; the connecting rods are of a similar material, oil-hardened and fitted with gunmetal bushes lined with whitmetal; coupling rods are of normal forged steel. The frame is carried on two groups of springs by means of non-adjusted links, the springs are made of slightly hollow rolled acid steel, while the boiler is carried on the front end by the saddle casting and at the rear by a firebox shell support in front and rear.

Sanding and Brake Gear

Sanding is supplied by hand-operated pull-rods, to the leading coupled wheels when travelling in the forward direction, and behind the trailing coupled wheels when in reverse. Vacuum braking is fitted to the engine, tender, and train, and was supplied by the Vacuum Brake Co. Ltd., two brake cylinders being fitted to the engine and tender, while the tender is also fitted with a hand brake. A central buffer coupling of the Atlas type is fitted to the front of the locomotive and at the rear of the tender, and are coupled by a drawbar and central buffers.

The roof of the cab is of double plate construction fitted with a ventilator, while a hinged door in the left

front provides access to the running board. The electric lighting equipment including the front and rear headlights was supplied by J. Stone & Co. (Deptford) Ltd.

Tender Design

The tender is interchangeable with the class "24" locomotives described and illustrated in our May 27, 1949, issue. In the present design the coal bunker has been swept-back to provide a better view for the engine crew when running in the reverse direction. The water tank is of all-welded construction and the coal bunker riveted. The underframe is also of riveted construction, and carried on two, three-axle cast-steel bogies, of the Buckeye type, in accordance with the approved design of the South African Railways.

The following are the principal weights and dimensions of the locomotive:—

Gauge	...	3 ft. 6 in.
Cylinders, dia. and stroke	...	18 in. x 26 in.
Rigid wheelbase	...	12 ft. 9 in.
Total wheelbase	...	12 ft. 9 in.
Coupled wheels, dia.	...	4 ft.
Boiler pressure	...	195 lb. per sq. in.
Grate area	...	30 sq. ft.
Heating surface:—		
Total evaporative	...	1,064 sq. ft.
Superheater	...	330 sq. ft.
Total	...	1,394 sq. ft.
Weight in working order	...	52 tons
Minimum curve	...	175 ft.
Tender:—		
Water capacity	...	4,200 imp. gal.
Coal capacity	...	8 tons
Wheels, dia.	...	2 ft. 10 in.
Rigid wheelbase	...	8 ft. 8 in.
Total wheelbase	...	24 ft. 7½ in.
Weight in working order	...	54 tons
Total weight in working order, engine and tender	...	106 tons
Tractive effort at 75 per cent boiler pressure	...	25,600 lb.

Illuminated Sign at Stafford Signal Box, L.M.R.

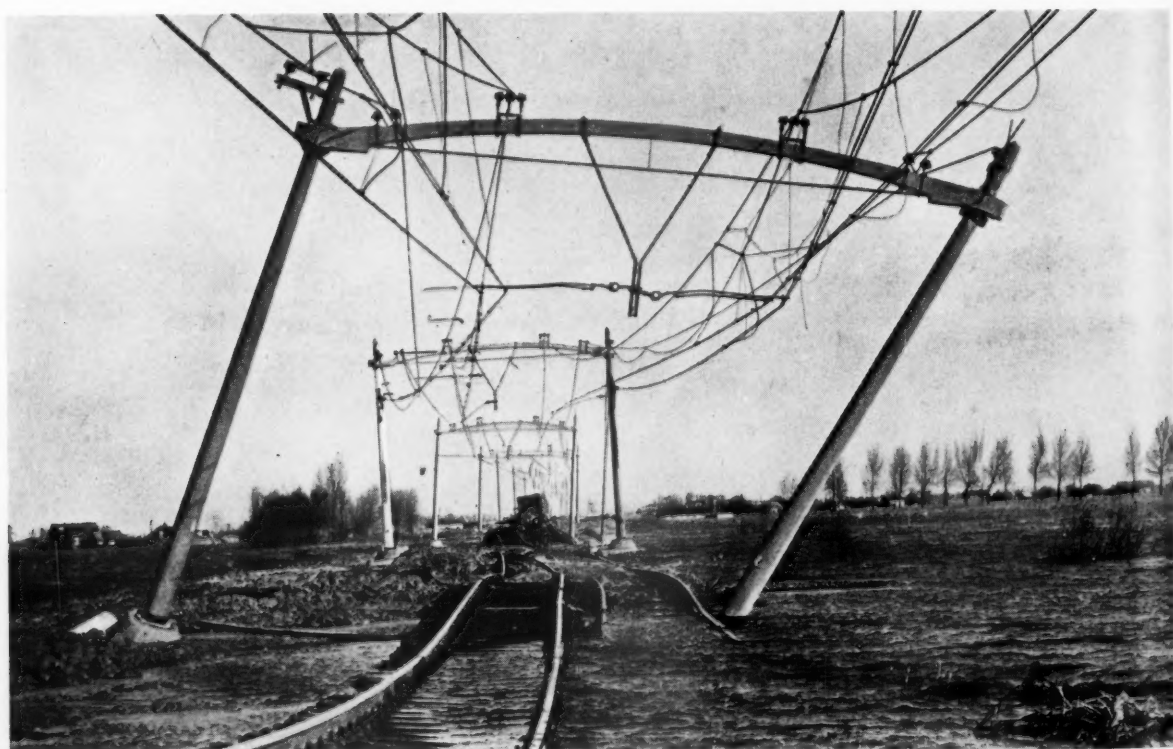


An example of how the large name signs on important L.M.R. signal boxes are being lighted to assist station identification at night

Flood Damage to British and Netherlands Railways



Subsidence of the Kent Coast main line of the Southern Region near Graveney, between Faversham and Whitstable



Netherlands Railways line at Moerdijk, south of Dordrecht, after being wrecked and partly submerged

RAILWAY NEWS SECTION

PERSONAL

Sir Reginald E. Robins, Commissioner, East Africa High Commissioner, will relinquish duty next month when he leaves East Africa on retirement leave.

Mr. A. F. Kirby, Assistant Commissioner, will become Acting Commissioner.

Mr. A. H. Croxton, District Superintendent, Salisbury, Rhodesia Railways, has been appointed Railways Representative in Northern Rhodesia, with headquarters at Lusaka.

Mr. F. J. McIntosh, B.Sc. (Eng.) (S.A.), A.M.Inst.C.E., has been appointed Chief Engineer, Rhodesia Railways, in succession to Mr. B. H. Johnson, who recently became Assistant General Manager.

Other appointments are:—

Mr. L. R. B. Green, B.Sc. (Eng.) (Lond.), A.M.Inst.C.E., to Deputy Chief Engineer;

Mr. A. M. Hawkins, B.Sc. (Eng.) (Lond.), to Deputy Chief Engineer (Construction);

Mr. G. J. Maylam, A.M.Inst.C.E., to Maintenance Engineer;

Mr. J. D. Marshall, A.M.Inst.C.E., A.M.Inst.Struc.Engrs., to Planning & Designs Engineer.

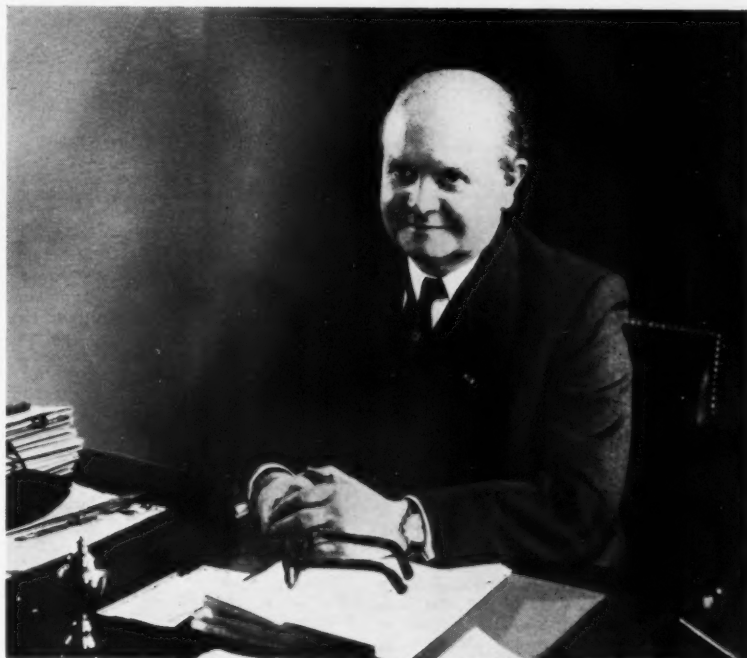
Mr. J. Kelleher, who, as announced in our January 9 issue, has retired as Transportation Superintendent, New Zealand Government Railways after 40 years' service, entered the railways in 1912 as a clerical cadet at Wellington. Except for a period of two years with the 1st N.Z.E.F. during the 1914-18 war, he was stationed at various railway offices in the Wairarapa, Manawatu and Hawkes Bay districts until 1925, when he was promoted to Stationmaster at Otane. From there he was transferred to the District Traffic Manager's office at Wellington as Accounts Clerk, later becoming Assistant Wagon Supply Officer. Between 1938 and 1947, Mr. Kelleher gained experience in the train-running offices at Wellington and Auckland, also at the Ohakune train-control office, and subsequently was promoted to Transport Officer at Wellington. In 1950 he was appointed Assistant Transportation Superintendent and was acting Transportation Superintendent from July to October, 1952.

Mr. H. E. Stevens, who, as announced in our January 9 issue, has been appointed District Traffic Manager, Wanganui, New Zealand Government Railways, joined the railways in 1915 as a clerical cadet at Wellington. He served two years with the 1st N.Z.E.F. during the 1914-18 war. Resuming duty in 1920, he was stationed progressively at Auckland, Te Aroha, Maungaturoto and Napier, before being transferred in 1929 to the position of Stationmaster at Wakefield. In 1936 he returned to the North Island, and after five years at Taihape was posted to Ohakune Junction as Train Control Operator. He was promoted to Train Running Officer in 1946, and a year later went to Tauranga as Transport Clerk. In 1948, Mr. Stevens was appointed Stationmaster-in-Charge of the 59-mile Nelson-Glenhope railway.

Mr. J. G. Whetton, who, as announced in our January 9 issue, has been appointed District Traffic Manager, Auckland, New Zealand Government Railways, began his railway career in 1917 as a clerical

cadet at Wellington. He later gained experience at stations in the Wanganui, Hawkes Bay and Main Trunk areas, and also served in the district traffic offices at Wanganui and Ohakune. In 1936 Mr. Whetton was transferred to the General Manager's Office at Wellington, where two years later he was promoted to Information Officer. In 1944, after two years as Stationmaster at Waipawa, he became Chief Clerk at Napier station and a few months later took up the position of Stationmaster at Paekakariki. Promotion to Assistant Stationmaster at Auckland

Monsieur Fernand Delory, who, as recorded in our November 7, 1952, issue, has retired as Director-General, Belgian National Light Railways, was born at Walhain-St.-Paul (Brabant) in September, 1887. He joined the State Railways Administration as a Clerk in April, 1906, and, until 1913, he served with the Executive Services (Stations), when he entered the Traffic Management Department. In 1921 he was transferred to a new service designed to carry out the industrialisation of the railways. He participated in the organisation of industrial accountancy,



Monsieur Fernand Delory

Director-General, Belgian National Light Railways,
September, 1946 to October, 1952

came in 1946, and was followed a year later by appointment to Assistant Traffic Manager at Ohakune Junction. From there Mr. Whetton returned to Auckland as Goods Agent, and in 1951 he was appointed District Traffic Manager at Wellington.

Mr. T. E. H. King, who, as announced in our January 9 issue, has been appointed District Traffic Manager, Wellington, New Zealand Government Railways, joined the Railways Department in 1914 as a clerical cadet at Christchurch, and served at various railway offices in Canterbury until 1922, when he entered Christchurch. Sixteen years later he was posted to the transport and train-running office at Greymouth, and from 1940 to 1943 performed similar duties at Dunedin. He was appointed Train Running Officer in 1943 and was transferred from Dunedin to the Transportation Superintendent's office, Wellington, in 1947. Mr. King acted as Assistant Transportation Superintendent for a period of two months during 1950, and was appointed Assistant District Traffic Manager at Wellington in 1952.

and was also engaged at that time in assisting the drafting of a Bill designed to grant the railways greater financial autonomy. When the Belgian National Railways Company was formed in 1926, M. Delory was appointed First Inspector to the Financial Department, and was the youngest high-grade Officer then in the Department. He became Chief Inspector in 1937 and, in 1938, was appointed Financial Manager. M. Delory was appointed Assistant General Manager in the early part of 1946, becoming General Manager in September of that year. He held that office until his retirement on October 1, 1952. Apart from his official duties detailed above, M. Delory took an active part in the international activities of the railways as Manager of the Central Clearing House, later becoming Chairman of the Permanent Committee. Later he became a representative of the Belgian National Railways to the Board of Management of the International Union of Railways. He became a Vice-Chairman of the U.I.C. in 1949, together with representatives of Great Britain and Italy. In 1946 he assumed the Chairmanship of the Railway

*Mr. H. F. Dennison*

Signal Engineer, Eastern Bengal Railway,
Pakistan, 1947-1953

*Mr. C. T. Hensfrey*

Appointed Works Engineer, East African
Railways & Harbours

*Mr. C. L. Keegan*

Appointed District Engineer, East African
Railways & Harbours

Congress Association and, in 1947, was Chairman of the Lucerne Congress. In 1949 he was Chairman of the extended Permanent Committee of Lisbon, in 1950 of the Rome Congress, and, in 1952, of the extended Permanent Committee of Stockholm.

Mr. H. F. Dennison, O.B.E., M.I.R.S.E., Signal Engineer, Eastern Bengal Railway, Pakistan, who has recently come to England on leave preparatory to retirement, relinquished his position on August 19, 1952. Mr. Dennison began his signalling career in the Signal Department of the Eastern Bengal State Railway in 1923. On completing his training in 1925, and being awarded the Moyle Medal for the best engineering student on the railway, he proceeded to England and joined the Siemens & General Electric Railway Signal Company in 1926, gaining his first power signal-

ling experience at Newport, Mon. In 1927, he joined the London Office, and worked in various departments including the Drawing and Estimating Sections to the end of 1929. In 1930 he returned to India as Assistant Resident Engineer on the installation of the automatic signalling scheme between Madras Beach and Tambaram on the South Indian Railway, and, in 1931, was put in charge of that project as Resident Engineer. On the successful completion of the contract in 1933, he returned to England, and, in 1934-35, was responsible for carrying out the re-signalling between Fenchurch Street and Bow Junction on the L.N.E.R. He went to Edinburgh early in 1935 as Resident Engineer in charge of the re-signalling at Waverly West, and, in December of that year, received his appointment as Assistant Signal & Telegraph Engineer, Assam Bengal Railway. In spite of the fact that Mr.

Dennison had only just joined the railway company, he was appointed to act as Signal Engineer from April, 1936, to February, 1937, and again from March to December, 1940. During 1937-40, Mr. Dennison was responsible for the installation and bringing into use of the first double wire multiple-aspect signalling in India at fifty way stations and junctions on the Assam Bengal Railway main-line section as well as the first power signalling installations on that railway at Chittagong, Lunding and Badarpur. In 1941, he was appointed on special duty as Civil Defence Officer, and was responsible for organising and controlling the Civil Defence Services for the railway covering the Assam Bengal Section, retaining this special appointment in addition to his duties as District Signal Engineer, until the end of the War. In recognition of his services during this period, Mr. Dennison was awarded

*Dr. P. F. A. Watkins*

Appointed Area Medical Officer, Swindon,
Western Region

*Mr. A. W. H. Christison*

District Motive Power Superintendent, Newton
Abbot, Western Region

*The late Mr. Alan P. Good*

Founder and Deputy Chairman,
Brush A.B.O.E. Organisation

the M.B.E. in January, 1945. With the amalgamation of the Assam Bengal and Eastern Bengal Railways as the new Bengal Assam Railway in 1942, Mr. Dennison was confirmed as District Signal Engineer. He acted as Signal Engineer of that railway from August, 1946, to May, 1947, and, on the Partition of India in August, 1947, he elected to serve the new country of Pakistan. Mr. Dennison was confirmed as Signal Engineer of the new Eastern Bengal Railway in October, 1947, and had the task of re-organising the Signal Department to meet the changed conditions brought about by Partition. In December, 1951, he represented the Pakistan Railways at the meeting of the Railway Working Party, United Nations Economic Commission at Bangkok. In recognition of his services with the Eastern Bengal Railway he was awarded the O.B.E. in January, 1953.

Mr. C. T. Henfrey, A.M.I.C.E., Senior District Engineer, East African Railways & Harbours, who, as recorded in our January 6 issue, has been appointed Works Engineer with effect from May, 1952, entered the service of the Railway Administration in 1935 as an Assistant Engineer, having previously served with the Public Works Department, Kenya, for nine years. After serving at various District Headquarters in Kenya and Uganda he was appointed District Engineer in 1947, and, in 1949, he became Senior District Engineer.

Mr. C. L. Keegan, B.A., B.A.I., A.M.I.C.E., who, as recorded in our January 6 issue, has been appointed District Engineer, East African Railways & Harbours, obtained his engineering degree at Dublin University. Mr. Keegan gained his experience of civil engineering works with a contracting firm in England before joining the Railway Administration in East Africa as an Assistant Engineer in 1945. During 1950 and 1951, he was Resident Engineer of the Southern Province Railway Construction in Tanganyika.

Dr. P. F. A. Watkins has been appointed Area Medical Officer, Swindon, Western Region, British Railways, succeeding Dr. A. W. Bennett, who retired on December 31 last. Dr. Watkins was educated at St. Lawrence College, Ramsgate, and entered St. Bartholomew's Hospital Medical School in 1937. He qualified M.R.C.S., L.R.C.P., in July, 1943, and was appointed House Physician and Casualty Officer at the Bolingbroke Hospital. He holds a Diploma in obstetrics and gynaecology and before entering railway service, worked both in hospital and general practice. During the war, Dr. Watkins served with the Royal Army Medical Corps in North-Western Europe and Egypt, was Mentioned in Despatches and demobilised holding the rank of Captain. Dr. Watkins was appointed to British Railways, Western Region, as Assistant Medical Officer at Paddington in July, 1949, which post he now relinquishes upon taking up his latest appointment.

Mr. A. W. H. Christison, District Motive Power Superintendent, Newton Abbot, Western Region, British Railways, who has retired, was born in February, 1887, and was educated at Haverfordwest Grammar School and Swansea and Swindon Technical Colleges. He began his railway career at Neath Locomotive Shops in 1903, and in 1907 he entered the Locomotive Works at Swindon to complete his apprenticeship where, in 1910, he transferred to the Drawing Office. In the first World War, Mr.

Christison was loaned by the Grest Western Railway to the War Office Military Railways Department and, in 1917, was sent to the Western Front, where he was employed by the War Office on the Belgian Railways until March, 1919. His appointment as Technical Inspector to the Swindon Division (Locomotive, Carriage & Wagon Department) took place in 1920, and two years later he transferred to Newton Abbot as Assistant to the Locomotive, Carriage & Wagon Superintendent. In June, 1927, Mr. Christison was appointed Divisional Superintendent of the Newton Abbot Division, which post was later redesignated District Motive Power Superintendent. A Freeman of Berwick-on-Tweed since 1908, Mr. Christison is also a Serving Brother of the Order of St. John of Jerusalem. He is a small bore rifle enthusiast and was a member of the team which were runners-up in the Railway Staff Association "All Lines" Competition 1947-48. Mr. Christison's family record of railway service is outstanding; his grandfather, the late Mr. A. W. C. Christison, who was at one time Traffic Superintendent of the former North Eastern Railway, completed 47 years' service and died in harness in 1890; his father the late Alexander Christison, former Divisional Locomotive, Carriage & Wagon Superintendent at Neath, completed 43 years' service upon his retirement in 1919, and Mr. Christison's own contribution of 50 years' railway service brings the family total to 140 years.

Mr. Alan P. Good, whose death was recorded in our February 13 issue, was born at Foxrock, near Dublin, in April, 1906. He was educated at Marlborough and Oxford where he took his law degrees, and later became a partner of Messrs. Pennington & Son, solicitors. Leaving law for commerce, his first business ventures included building, steel and retail butchery. By 1935, he had confined his activities almost exclusively to engineering. His aim was to acquire a group of diesel engine companies and to rationalise output so that any one factory had a comparatively limited range to cover whereas the group as a whole had a very wide range. The result of this policy was the formation of the Brush A.B.O.E. group which consists of the Brush Electrical Engineering Co. Ltd., and Associated British Oil Engines (Mirrlees, Bickerton & Day Limited, Petters Limited, J. & H. McLaren Limited, the National Gas & Oil Engine Co. Ltd., and Henry Meadows Limited. He controlled the group as Deputy Chairman & Managing Director of the Brush Electrical Engineering Co. Ltd., the parent company. He became ill in 1950 and Mr. Miles Beevor was appointed Deputy Managing Director and Mr. Ian T. Morrow Financial Director. Mr. Good resigned his Managing Directorship in October last year. He remained Deputy Chairman and continued to take an active interest in the affairs of the companies. He was also Chairman of Associated British Engineering Limited and Heenan & Froude Limited.

Mr. J. B. Figgins, General Secretary, National Union of Railwaymen, will retire on March 8. He will be succeeded by Mr. James S. Campbell, Assistant General Secretary.

Mr. R. F. Bonny, M.A., A.M.I.C.E., Assistant District Engineer, Cambridge, Eastern Region, British Railways, has been appointed Assistant District Engineer, Kings Cross.

Mr. J. C. Mertens, Deputy Traffic Manager, Iraqi State Railways, has relinquished his position, and is at present in England.

The Queen, on February 10 at Buckingham Palace, conferred the honour of Knighthood on Mr. John Benstead, C.B.E., Deputy Chairman, British Transport Commission.

The Queen, on February 17 at Buckingham Palace, conferred the insignia of a Companion of the Royal Victoria Order on Mr. S. W. Smart, Superintendent of Operation, Southern Region, British Railways.

We regret to record the death on February 13 of Mr. G. S. Rider, M.B.E., formerly District Commercial Superintendent, Bristol, Western Region, British Railways. Mr. Rider was in his 67th year.

Mr. H. Charlton, Head of Claims Section, Commercial Superintendent's Office, York, North Eastern Region, British Railways, has been appointed Assistant District Goods Manager, Leeds.

Following the resignation of M. Pinay as Prime Minister, new informal Parliamentary Committees have been elected in France. Monsieur M. Lemaire, former General Manager of the S.N.C.F. and now a Deputy in the French National Assembly, who was previously a member of the Means of Communication Committee, has relinquished that appointment and has been elected to the Financial Committee.

Mr. J. T. Smith, Director in charge of Engineering on the Board of the Metals Division, Imperial Chemical Industries Limited, has retired.

Mr. W. W. Foster, General Works Manager, Dunlop Rubber Co. Ltd., has retired owing to ill-health. He is succeeded by Mr. E. E. Quinton, General Works Manager at the Speke Factory.

As from February 1, 1953, Mr. C. H. Flurscheim, B.A., M.I.E.E., Mem.A.I.E.E., Chief Engineer, Switchgear Department, Metropolitan-Vickers Electrical Co. Ltd., has been appointed Assistant Chief Electrical Engineer in addition to his present duties.

Institution of Mechanical Engineers

The following is a selection of names from a list of recent elections to Associate Membership of the Institution of Mechanical Engineers:—

Mr. L. W. Culling, Chief Mechanical Engineer's Department, Carriage & Wagon, British Railways, Derby.

Mr. R. Ferguson, Murex Limited, Rainham, Essex.

Mr. S. C. Jones, M.B.E., Davey, Paxman & Co. Ltd., Colchester.

Mr. W. Leake, English Electric Co. Ltd., Stafford.

Mr. K. A. G. Lloyd, Lansing Bagnell Limited, Birmingham.

Mr. D. C. McKenzie, Cowlares Works, British Railways, Glasgow.

Mr. J. Z. Nicolaisen, Silentbloc Limited, London.

Mr. A. E. Nix, Brush Electrical Engineering Co. Ltd., Loughborough.

Mr. E. E. Sample, British Thomson-Houston Co. Ltd., Rugby.

Lt.-Commander C. Van Hazel, R.N.N., Werkspoor N.V., Amsterdam, Holland.

British Transport Commission Statistics. (Period No. 13)

Summary of the principal statistics for the four-week period ending December 28

STAFF

	B.T.C. Head Office	British Railways	London Transport	British Road Services (Road Haulage)	Road Passenger Services (Provincial & Scottish)	Hotels & Catering	Ships & Marine	Inland Waterways	Docks, Harbours, Wharves	Railway Clearing House	Commer- cial Adver- tisement	Legal	Films	Total
Number ...	283	601,381	97,132	72,616	60,974	15,326	6,162	4,795	20,812	562	197	324	41	880,605
Inc. or dec.	—	—1,096	—266	—362	—208	—64	—32	+21	—13	—7	—2	+1	+1	—2,027

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

	Four weeks (Period No. 13)		Aggregate for 52 weeks	
	1952	1951	1952	1951
	£000	£000	£000	£000
British Railways—				
Passengers	8,106	7,875	109,677	106,708
Parcels, etc., by passenger train ...	2,867	2,468	35,731	32,939
Merchandise	7,555	7,223	102,160	97,802
Minerals	3,286	2,949	41,939	36,596
Coal & coke	7,889	6,766	100,985	90,996
Livestock	113	107	1,885	1,553
	29,816	27,388	392,377	366,594
British Railways—				
C. & D. and other road services ...	814	773	11,327	10,527
Ships and Vessels	643	685	11,505	11,855
London Transport—				
Railways	1,419	1,225	17,957	16,054
Buses & coaches	2,734	2,533	39,012	33,654
Trams & trolleybuses	640	690	9,411	9,609
	4,793	4,448	66,380	59,317
British Road Services—				
Freight charges, etc.	5,480	5,766	76,234	77,565
Road Passenger Transport	3,208	3,004	47,467	43,301
Docks, Harbours & Wharves	1,156	1,138	15,958	14,156
Inland Waterways	156	156	2,211	1,992
Hotels & Catering	1,224	1,249	16,257	16,070
Total	47,290	44,607	639,716	601,377

LONDON TRANSPORT

	Passenger journeys	Inc. or dec. per cent. over 1951	Car miles	Inc. or dec. per cent. over 1951
Railways	000 45,888	— 1.8	000 15,770	— 4.5
Buses & coaches	205,406	— 6.6	24,506	— 1.8
Trolleybuses & trams	53,051	—22.4	5,257	—20.6
Total	304,345	— 9.2	45,533	— 5.3

INLAND WATERWAYS

Tonnage of traffic and ton miles

	Tonnage	Inc. or dec. per cent. over 1951	Ton miles	Inc. or dec. per cent. over 1951
Coal, coke, patent fuel & peat ...	000 439	+ 1.2	000 6,310	— 0.9
Liquids in bulk	141	— 8.1	3,452	— 3.3
General merchandise	249	—26.1	4,258	—18.9
Total	829	—10.3	14,020	— 7.7

BRITISH RAILWAYS

Rolling Stock Position

	Operating stock	Number under repair	Serviceable stock	Serviceable stock in 1951
Locomotives	18,722	2,869	15,853	15,847
Coaching vehicles	57,602	5,169	52,433	53,188
Freight wagons	1,120,194	75,562	1,044,632	1,054,889

BRITISH RAILWAYS

Passenger Journeys (Month of November, 1952)

Full fares	Excursions, cheap day, etc.	Other descriptions	Early morning and workmen	Season tickets	Total	Inc. or dec. per cent. over 1951
15,373,000	17,134,000	3,097,000	16,274,000	19,023,000	70,901,000	—3.0

BRITISH RAILWAYS

Freight Tonnage Originating and Estimated Ton-Miles (Period No. 13)

	Merchandise	Minerals	Coal & coke	Livestock	Total	Inc. or dec. per cent. over 1951
Tons originating	000 3,594	000 4,741	000 12,804	000 45	000 21,184	+0.4
Ton-miles	474,395*	383,473	764,609	—	1,622,477	—3.6

* Includes livestock

BRITISH RAILWAYS (Period No. 13)

	Total steam coaching train-miles	Total electric coaching train-miles	Total freight train-miles	Freight train- miles per train engine-hour	Net ton-miles per total engine-hour	Locomotive coal consumption	
						Total tons	Lb. per engine-mile
1952	13,205,000	3,470,000	10,063,000	7.94	578	1,019,000	66.1
1951	13,415,000	3,560,000	10,292,000	7.92	584	1,037,000	65.6

Parliamentary Notes**Transport Bill Third Reading***Plans for Scotland: Changes in the Bill arising from debate: Labour threat to renationalise*

Mr. Alan Lennox-Boyd (Minister of Transport) on February 16 moved the Third Reading of the Transport Bill. He said the Bill had been improved considerably in its various stages and would no doubt be further improved in the House of Lords.

Of the 247 amendments put down in the Committee Stage 20 were Government amendments and 161 were from the Opposition. Of these 140 were debated. On the Report Stage 120 amendments were put down, of which 31 were Government and 61 Opposition amendments. Seventy-five were debated. He compared these figures with those of the corresponding stages of the 1947 Act, of which, he said, 35 clauses and six schedules were not discussed at all.

The emphasis had been on the interest of the users of transport. The Government hoped that freedom given the railways as to charging would enable them to become really competitive and to offer a better service.

Transport Council for Scotland

Further talks had been held with the Secretary of State for Scotland and with the Scottish Council. Mr. Lennox-Boyd added, about the new transport co-ordinating machinery and its functions. The Government thought this new body might be called the Scottish Transport Council.

Membership should be representative of all publicly owned transport in Scotland by road, rail, sea, and air. In addition there would be independent members. There would therefore be two bodies in Scotland: the Scottish Transport Users' Consultative Committee, to protect the interests of the consumer in the publicly owned field of the British Transport Commission's activities, and the new Scottish Transport Council to cover the whole field of publicly owned transport.

Mr. A. C. Manuel (Central Ayrshire—Lab.) said some parts of the Highlands would be bereft of road transport after the Bill became law.

Mr. Lennox-Boyd pointed out that the Bill included provisions which ensured service of certain districts by purchasers of road haulage businesses.

Changes in the Bill

Reviewing changes in the Bill resulting from Parliamentary debate, Mr. Lennox-Boyd stressed the protection now given to traders in the matter of competitive railway charges, and to coastal shipping and harbour authorities. He drew attention also to improvements which prevented the whole of the 10 per cent increase in revenue being imposed on any one form of merchandise, and that in London fares from exceeding the amount of increased costs in the London Area. Further improvements were the amendment to Clause 15 relieving the Minister of the duty of publishing the reorganisation plans for the railways, and the duty laid on the Minister to provide for protection of pension rights.

Mr. Lennox-Boyd referred to the amendment intended to be introduced in the Lords as to the increase allowed in former railway-owned vehicles.

It had been found possible to drop the second part of the transport levy, now to be retained only for a limited purpose, with an obligation on the Minister to bring it to an end when the proceeds for the payment of the three specified charges had been met. Fears about the transition period had been largely exaggerated and there was no reason to anticipate a disturbance in selling part of the road haulage undertaking.

It was proposed to introduce an amendment in the Lords as to provision of company structure for a limited part of the road haulage fleet. He hoped that would give a measure of confidence to those who were disturbed about the transition period, and a measure of reassurance to employees in the industry.

Twenty-Five-Mile Limit

The working out of the 25-mile limit scheme under the 1947 Act. Mr. Lennox-Boyd went on, had created the most ludicrous circumstances. If the Road Haulage Executive was to be abolished it was essential to retain that 25-mile limit, but only for a limited period, and he was glad that it had now been found possible to bring it to an end at the end of 1954.

Opposition Threat of Repeal

Mr. James Callaghan (Cardiff S.E.—Lab.) said that opposition in the country and among his own supporters had caused the Minister to make changes in the main purpose of the Bill, but he still kept the House in the dark about his new conception of the method of disposal and about the road haulage set-up after denationalisation. The existing pattern of service, built up nationally, would be destroyed, though the Minister did not know how he would destroy it or what pattern of service would replace it. The whole trouble was that the Tories felt an insane desire, at all costs, to break up British Road Services.

The price of getting the road hauliers' support of the Bill, Mr. Callaghan went on, was that the Minister had to agree to cut out proposals to avoid the ancient battle between road and rail, and he had substituted a provision under which the railways were to be free to charge what rates they liked. There was to be an all-out war between road and rail. The 1947 Act had not failed. It had not yet been tried.

On the financial side the Minister had destroyed something that was going to be of great value to the trading and commercial interests of the country. On the physical side the acquisition of the undertakings was not completed in October, 1951, when the Government were returned to office. A national road haulage service would have to be built up and the Labour Party would do it.

The Bill, Mr. Callaghan continued, brought the relationship of road and rail back into the political arena. It was doubtful whether the licensing system for road haulage would stand the strain which the Minister would put on it.

The Bill would not remain on the Statute Book for long. Nothing had been said in the debates which would deflect the Opposition from the view that the

integration of road and rail under public ownership and control was right. The men were resolutely against the measure, the public knew it was a bad Bill, and the Opposition undertook to repair the damage as soon as possible.

Mr. Richard Fort (Clitheroe—C.) said the Commission had shown that on main-line passenger trains the cost per passenger mile was one-third of a penny, whereas on branch lines it was 2s. 1d. and that contrast would be almost equally true of freight. Because of Parliament's insistence on a more or less uniform system of freight charges throughout the country the railways had been operating a system of internal subsidies, the low-cost part of the service subsidising the high-cost part. The right way of providing the high-cost areas with transport would be to give them open subsidies, so that Parliament and the country would know what it was paying for those services.

This was the most revolutionary Bill introduced for many years. It would allow road and rail, by competition, to work out together in a logical way what goods could best be carried by one or the other.

Mr. Percy Collick (Birkenhead—Lab.) said that the only apparent justification of the Bill was that the Government somehow had to discharge the obligation which it owed the road interests for backing it in the Election.

Needs of Industry

Mr. Robert Carr (Mitcham—C.) said that the Bill offered to him, as an industrial user of transport, the hope of having special needs met without having to buy extra "C" licence vehicles. It would result in more economical use of capital resources in transport.

Mr. R. J. Mellish (Bermondsey—Lab.) said that the Minister owed a debt to trade union leaders for restraining their members from taking direct action against the Government while the Bill was being discussed.

Mr. Geoffrey Wilson (Truro—C.) said the Bill denationalised only a very small part of a very small section of the industry. It was freeing competition as far as the railways were concerned in a way that had never been done in the last hundred years. The success of the Bill depended on the use the B.T.C. made of Clauses 14 (reorganisation) and 19 (charges). There was room for abolition of "a lot of illogical nonsense" that had crept in since the 1947 Act was passed, such as the Hotels Executive. He hoped the Regions would be called Railways.

As to use made of Clause 19, Mr. Wilson continued, the forthcoming introduction of the "Starlight Specials" between London and Scotland showed how railways could fight back. That development might have been unfortunately timed, and perhaps introduced months before. Cornish people had been asking for something of the sort for a long time, also for a cheaper out-of-season ticket to coast resorts.

Mr. Niall Macpherson (Dumfries—L. & C.) pleaded for part-time boards for the new railway areas, particularly Scotland.

Mr. Thomas Steele (Dunbartonshire W.—Lab.) said the Minister seemed to want,

for Scotland, a sort of Scottish Consultative Committee, as on the L.M.S.R.

Mr. Gerald Nabarro (Kidderminster—C.) said denationalisation of long-distance road haulage was the only efficient process that could be adopted to give users in industry and commerce the service they needed.

Corporate Pride

The nomenclatures of the famous British railways should be reintroduced, he added, and above all, those magic words "Great Western" should be painted on the sides of the world's most famous locomotives. Much of the corporate pride that reposed in the G.W.R. and many other systems before nationalisation had passed away as a result of the mediocrity and standardisation which had come since nationalisation. That was the view of thousands of employees in the Western Region. He hoped this would be rectified by schemes introduced under Clauses 14 and 15.

Mr. I. O. Thomas (Wrekin—Lab.) asked why a Conservative (or at least a Coalition) Government had effected Grouping in 1923, if the Tories were so fond of the old railways.

Mr. Percy Morris (Swansea W.—Lab.) pointed out that nobody had quoted a single transport expert. They had found it convenient to forget men like Lord Stamp, the late President of the L.M.S.; Mr. William Whitelaw of the L.N.E.R.; and Sir Eustace Missenden, General Manager of the Southern and first Chairman of the Railway Executive. The Labour Minister of Transport had inherited a railway system that was quite bankrupt in 1938.

Mr. Nabarro said that the G.W.R. had never defaulted on its preference shares.

Mr. Patrick Maitland (Lanark—C.) said that in Scotland many transport workers had not responded to the encouragement from their union to protest against the Bill, and far from there being intense anxiety about its possible effects there were many workers who looked forward with confidence.

Mr. J. A. Sparks (Acton—Lab.) said that no transport expert would support the Minister's proposals. The Labour Party would have to reverse the process which was being adopted in the Bill, for the integration of road and railway transport was an economic inevitability.

Labour Charge Against Minister

Mr. Ernest Davies (Enfield E.—Lab.) said the House had to take a serious view of the way in which the Minister had left it to the House of Lords to make substantial amendments to the Bill. He had treated the House with contempt in refraining from introducing in the House some of the vital measures which the Bill was supposed to interpret.

For this major political blunder of the Government, in forcing the Bill through under the guillotine, the country would have to pay ultimately. The Bill could not succeed, and it would result in a return to the jungle of chaotic transport operation. Many of those who entered the industry as a result of the sell-off of the nationally owned undertakings would burn their fingers, for they would not be compensated twice.

Mr. Gurney Braithwaite (Parliamentary Secretary to the Ministry of Transport) said the increase in the percentage of vehicles which the Commission could retain would cover horse-drawn vehicles or their substitutes.

There was no substance in a suggestion

that the loss of personnel from the Road Haulage Executive to private enterprise was due to the advent of a Tory Government. In the "honeymoon period" of 1949, 15,182 sought release from the bonds of matrimony. He did not believe that the political colour of the Government of the day had the slightest effect on these matters.

The Bill emerged from all its stages with the main object of the Government fulfilled, to restore long-distance road haulage to private enterprise, without at the same time imposing any unfair burden on the railways. On the contrary, Mr. Braithwaite added, it would give the railways far greater opportunities for competition than they had enjoyed at any time during the last 100 years, when so many restrictive statutes had been placed upon them.

The motion was carried by 296 votes to 257—Government majority, 39.

First Reading in the Lords

The Transport Bill was brought up from the Commons and read a First Time in the House of Lords on February 17.

B.T.C. Bill

The Second Reading of the British Transport Commission Bill was deferred till February 23. As recorded in last week's issue, the Second Reading of this Bill has been objected to by some Conservative members.

Fares Increase

Mr. A. T. Lennox-Boyd (Minister of Transport) in a written reply on February 16 said that increases in passenger fares since 1947 had been, on an average, about 30 per cent on London Transport and 20-30 per cent on road passenger companies' undertakings outside London owned by the B.T.C.

On British Railways, after making allowance for the extension of cheap fares facilities, the average increase was about 10 per cent, but compared with 1939, fares on British Railways were higher by nearly 90 per cent while London Transport fares had risen by about 70 per cent.

Staff & Labour Matters

Engineering Wage Claim

A conference of engineering shop stewards decided on February 15 to press for new pay claims for engineering workers. A resolution calling for an immediate application for a 15 per cent rise in consolidated rates was carried, and put to a meeting of the C.S.E.U. in York on February 18. The conference last Sunday was called by the Engineering & Allied Trades Shop Stewards National Council and over 150 factories were represented.

The decision of the conference included: Demand for an increase of 15 per cent, or an average of £1 a week on present wage rates, with a time limit of three months on negotiations; a 40-hr. week immediately, with strict adherence to the national agreement on overtime; opposition to dismissals of workers on grounds of redundancy; lifting of the bans on East-West trade; and Government assistance to the motor manufacturing industry and abolition of purchase tax on cars.

Increased Pay for Mineworkers

As from February 16 mineworkers have received a pay increase of 6s. a week after

protracted discussions between the National Coal Board and the National Union of Mineworkers.

The new rates bring the minimum weekly rates in the industry to £7 6s. 6d. for the underground and £6 7s. 6d. for the surface worker. The cost of the increase is estimated at £6 million a year. In reaching a settlement the N.U.M. has agreed to recommend during next winter, and in summer where local arrangements are made, continuation of Saturday shifts.

British Railways West End Bureau

British Railways are to open a new booking and information office, to be known as the British Railways Travel Centre, in the West End of London. The new office will occupy 8,000 sq. ft. on the ground floor of Rex House at the corner of Lower Regent Street and Carlton Street (just off Piccadilly Circus) and will take the place of four existing offices at 71, Regent Street, 7-8, Charing Cross, 22, Charing Cross Road, and Sherwood Street. Work on the conversion of the premises is now in hand.

The whole of the side in Carlton Street, and much of the Regent Street side, will be windowed, giving an unrestricted view of the interior and providing adequate space for the display of travel literature. The interior will be air-conditioned and brilliantly lit, and the equipment will include a projector for showing travel films. Ample counter space and comfortable seating will enable inquiries and bookings to be dealt with expeditiously and in pleasant conditions.

This will be the first British Railways office to offer tickets and reservations by all British, Irish and Continental routes. An expert staff, including interpreters, will be available to help the traveller; and travel tickets, seat reservations, sleeping berth tickets, and cabin reservations will all be obtainable.

It is planned to have the new office open by Whitsun in time to deal with the large number of British and overseas visitors expected for the Coronation.

Coaling Plant Repair at March

The locomotive coaling plant at March motive power depot was recently the scene of some excellent repair work carried out by Eastern Region Staff. At 5 p.m. on January 6 one of the main wagon hoist lifting ropes of this plant broke whilst a coal wagon was being lowered to the ground, thus preventing any further tipping of coal into the plant hoppers from which locomotives receive their supplies. The hoistman, hearing the rope break, managed to stop the machinery, and thereby prevented extensive damage to the wagon cradle and winding gear.

To restore the plant to working order entailed the complete removal and replacement of the wire rope, which was 150 ft. long and weighed approximately half a ton. The men were severely handicapped as it was snowing at the time, there was an intensely cold wind, and the rope was thickly coated in grease. In spite of these obstacles and the fact that the work had to be carried out at a height of about 70 ft., a complete repair was effected within 15 hr. —before the stock of coal already in the plant hoppers had been exhausted.

Great credit is due to the hoistman for

his prompt action, and to all the repair staff concerned in carrying out the work so efficiently, which prevented any interruption in the coaling of locomotives. Suitable monetary awards have been made.

Camping Coaches in Scotland

The Scottish Region is providing camping coaches at the following ten stations between April and October: (*Coast*), Appin (Argyll); Portessie (Banff); Arisaig (Inverness); Morar (Inverness); Strome Ferry (Ross & Cromarty); (*Country*), Loch Awe (Argyll); Glenfinnan (Inverness); Eddleston (Peebles); Aberfeldy (Perth), and Strathyre (Perth). Each coach has sleeping accommodation for six adults in three compartments, living room, and fully fitted kitchen.

Camping apartments are also available in some areas where the passenger train service has been withdrawn; the station premises have been converted to afford accommodation for parties of four or, in some instances, six adults. The apartments, which are fully equipped and furnished with bedding, crockery and cutlery, and are situated at eleven stations in the counties of Aberdeen, Banff, Kincardine, Perth, Fife, and East Lothian.

Repairing East Coast Flood Damage

The promptitude of the measures taken to repair sea defences and flood-damaged sections of railway is shown by the fact that between the start of the floods on the East Coast on January 31 and February 13, some 80 trainloads of equipment and material were worked to the affected areas in the Eastern and Southern Regions.

Flood Works in Eastern Region

A preliminary assessment of the cost of the work necessary in the Eastern Region is some £250,000, including work undertaken by the Eastern Region on behalf of Catchment Boards whose resources were insufficient.

The first of the special trains conveying stone, sandbags, and so on ran on the night of February 1. Over 20,000 railway parcels for relief centres had been conveyed free for the W.V.S. and 10,000 bags of G.P.O. parcels during the first fortnight.

When flooding first occurred no embargo was placed on traffic to the stricken areas, but emergency railheads were established. In conjunction with the National Coal Board, coal trains in block loads were run from the Eastern Midlands coalfield area.

Much passenger rolling stock and many locomotives were isolated and emergency measures were taken to deploy motive power and passenger stock resources. Re-routing of traffic resulted in some branches becoming main lines, such as the Ockendon single line, which was the only link with Tilbury, and which, in the emergency, was used for the working of all trains—suburban, ocean liner specials, and freight. Earlier this week, the Tilbury Section main line had been reopened between Pitsea and Leigh-on-Sea; lines still closed included the Purfleet-Grays, Heatham-Hunstanton, and Beccles-Yarmouth South Town sections.

Continental services from Parkeston Quay were maintained, though delayed. The wagon ferry from Harwich was, however, put out of action because of washing-out of the line between Parkeston Quay

and Harwich; this service had not yet been restored at the time of going to press.

Relaying Canterbury Spur

In view of the long period which may elapse before a full service to and from Kent Coast resorts can be worked over the flood-damaged section between Faversham and Birchington, and of the importance of this traffic in the holiday season, the spur giving through running between Faversham and Thanet stations via Selling, Canterbury West, and Minster Junction is being reinstated and fully signalled. It is to be brought into full use on February 23, when London-Margate trains via Chatham will use the spur instead of the temporary diversion route via Canterbury East, Kearsney, and Deal.

Special posters were issued by the Eastern and Southern Regions warning passengers of possible suspension or diversion of services.

Contracts & Tenders

The Stanton Ironworks Co. Ltd. has placed an order with the Metropolitan-Cammell Carriage & Wagon Co. Ltd. for ten 20-ton all-steel covered wagons with hopper discharge for conveying bulk cement. This order will bring to 29 the number of wagons of this type owned by the company.

The Egyptian State Railways have placed the following contracts:—

Birmingham Railway Carriage & Wagon Co. Ltd.: 50 10-ton open low-side wagons.
Société Métallurgique d'Enghien-St. Eloi, Enghien, Belgium: 80 10-ton petroleum tank wagons.

British Railways, Eastern Region, have placed the following contracts:—

Dorman Long & Co. Ltd., Middlesbrough: Reconstruction of portion of superstructures of underline bridge carrying suburban lines over Warburton Road and underline bridge carrying suburban lines over Exmouth Place, between Cambridge Heath and London Fields.

Walter Cowen Limited, W.14: Renewals, repairs and reglazing, station roof at Liverpool Street Station.

Banyard & Houchell, Woodbridge: Demolition of old and construction of new crossing keeper's cottage at Blaxhall Crossing, Wickham Market.

A. Cameron Limited, S.W.8: Cleaning and painting of Hamilton Buildings, station buildings, offices, workshops, messrooms and bridges at Liverpool Street Station East Side. Cleaning and painting No. 233, High Street, Shoreditch.

Scottish Machine Tool Corporation Limited, Johnstone, Renfrewshire: Purchase of one Loudon 4 ft. diameter double faceplate super-speed heavy-duty wheel lathe for Doncaster Wagon Works.

North Acton Conveyor & Elevator Co. Ltd., W.3: Purchase of two wagon unloading machines for Norwich Thorpe.

Consolidated Pneumatic Tool Co. Ltd., Manchester: Purchase of Hicycle and pneumatic equipment for Gorton Carriage & Wagon Works.

W. & C. French Limited, Buckhurst Hill: Strengthening and drainage of embankment between Pitsea and Benfleet.

Carter-Horseley (Engineers) Limited, Waddon: Partial recovering of station roof at Fenchurch Street Station.

The Director-General, India Store Department, invites tenders for the supply of wheels and axles. Further details appear under official notices on page 223.

The Special Register Information Ser-

vice of the Board of Trade, Commercial Relations & Exports Departments, reports that the United Kingdom Trade Commissioner at Delhi has notified a call for tenders issued by the Directorate General of Supplies & Disposals, Government of India, for:—

400 inner casings for engine buffer lamps (made of malleable iron) as per G.I.P. Railway Mech. Drawing No. E.Q. 141 alt. 1 (D.G.I. & S. No. 2608/1) and materials as shown in the drawing.

Tenders should reach the Director General of Supplies & Disposals, Shahjahan Road, New Delhi, by 10 a.m. on March 5. A copy of the tender documents is available for inspection at the Board of Trade by representatives of United Kingdom manufacturers. A further copy is available on loan in order of written application. Reference C.R.E./5114/53 should be quoted.

The First Secretary (Commercial) of the British Embassy at Montevideo has notified the Board of Trade Commercial Relations & Exports Department, of a call for tenders issued by the Administracion de Ferrocarriles del Estado (Uruguay) for:—

1,000,000 steel dog spikes, 19 mm. (¾ in.) square section, 117 m. long from the point of the spike to the lower face of the head. The steel used must be obtained from a Siemens-Martin furnace or a Bessemer acid converter, with the following minimum carbon contents: Bessemer acid converter, 0.06 per cent; Siemens-Martin furnace, 0.12 per cent.

Tenders should reach the Gerencia General de la Administracion de los Ferrocarriles del Estado, Calle La Paz No. 1095, Montevideo, by 10 a.m. on March 10. A copy of the tender documents (in Spanish) and of the drawing available for inspection at the Board of Trade by representatives of United Kingdom manufacturers. A further copy of the tender documents (also in Spanish) and of the drawing is available on loan in order of written application. Reference CRE/4481/53 should be quoted.

CENTRAL TRANSPORT CONSULTATIVE COMMITTEE.—The Minister of Transport, Mr. Alan Lennox-Boyd, said in a recent answer to a question in the House of Commons that the Central Transport Consultative Committee for Great Britain had made thirteen substantive recommendations to the B.T.C. which had been accepted. These were upon the following matters: Car parking at stations; mechanical handling of goods; railway transits in Eastern England; train services between Clapham, Olympia, and Willesden; travel in N.E. London; increase in road haulage charges; Clyde steamer services; baths for women travellers at railway hotels; transport of schoolchildren; passenger train service on Cheddington-Aylesbury branch; Hastings train services; information to Consultative Committees for considering closing of branch lines; and indication in timetables of services substituted for passenger services withdrawn. Recommendations of the Committee on traders' season tickets and bulk travel facilities, he added, were found to be unacceptable; the Committee subsequently decided not to press for the reintroduction of bulk travel facilities. The recommendation on the increase in restaurant cars and buffet prices, that there should be more buffet and cafeteria cars was endorsed by the Commission and was being carried out. The B.T.C. could not agree that it should compel traders and members of the travelling public who do not use restaurant car facilities to contribute to their cost.

Notes and News

High Commission for Pakistan.—Applications are invited for posts of inspectors and assistant inspectors, between 35 and 45 years of age, with headquarters in London. See Official Notices on page 223.

Accident to Railbus in Argentina.—Twenty-three were killed and 42 injured near Comodoro Rivadavia, Patagonia, in southern Argentina, on February 15, when a railbus became derailed and fell down an embankment.

Permanent Way Institution 1953 Convention.—Further to the paragraph in our February 13 issue the convention to be held at Cardiff from May 16 to May 21 this year concerns not only the London Section but the whole of the Permanent Way Institution.

Inquiry into Loss of m.v. "Princess Victoria."—The formal investigation to open in Belfast on March 23, into the loss on January 31 of British Railways m.v. *Princess Victoria*, will be held by Mr. J. H. Campbell, Q.C., Resident Magistrate, Belfast, assisted by assessors.

Vacancy for District Mechanical Engineers.—Applications are invited for the post of district mechanical engineer, about 35 years of age, required by a British railway in Nyasaland and Portuguese East Africa. Experience of diesel locomotives would be an advantage. See Official Notices on page 223.

South Wales Lecture & Debating Society.—Mr. D. S. M. Barrie, Public Relations Officer, Railway Executive, will read a paper on "Historical Notes on the Railways of the Western Region in South Wales and Monmouthshire" before the South Wales & Monmouth Railways & Docks Lecture & Debating Society in the Board Room of the Dock Manager's Office, Swansea, on Thursday, February 26, at 6.45 p.m.

Appeal for Increased Coach Services Rejected.—An appeal by Ribble Motor Services Limited, and Scottish Motor Services Limited against a ruling of the Scottish Licensing Authority limiting their night motorcoach services between Liverpool and Edinburgh, has been rejected by the Minister of Transport. The operators had been given permission by the Authority to run a night service of one vehicle and two duplicates in each direction. Permission was sought to increase this to 18 vehicles each way.

Ensuring Coal Supplies in Severe Weather.—To ensure coal supplies to industry during the inclement weather, including heavy snowfalls last weekend, some marshalling yards were kept open and other special efforts made to keep coal traffic moving. Fifty-eight coal trains in addition to normal traffic were run from the South Yorkshire and Nottingham coalfields to Manchester and other parts of the North-West. During the 48 hr. ended 6 a.m. on February 16, ten men at Mottram Yard, working 12-hr. shifts, handled 3,800 wagons, of which 80 per cent contained some 29,000 tons of coal.

Transport Services to Northern Ireland.—Further to talks in London between Mr. W. V. McCleery, Northern Ireland Minister of Commerce, and Lord Hurcomb, Chairman of the British Transport Commission, British Railways are being asked to re-examine the proposed

alterations in the steamer services between Stranraer and Larne and Belfast. The proposals include the transfer of the Northern Ireland terminal of the Stranraer steamer service from Larne to Belfast, and improvement of the port terminals and ports in both areas and operation of two new additional ships from Heysham to Belfast.

Mansion House Association on Transport.—The Mansion House Association on Transport will hold a luncheon at the Trocadero Restaurant, Piccadilly Circus, on Friday, March 27, at 12.15 p.m. for 12.45 p.m., preceding the annual general meeting. Mr. Alan Lennox-Boyd, the Minister of Transport, will be the principal guest.

Mr. John Elliot's Visit to Scotland.—Mr. John Elliot, Chairman of the Railway Executive, visited Scotland on February 9 and 10, accompanied by Mr. A. J. Pearson, Chief Officer (Administration), and Mr. J. Ness, Chief Officer (New Works), Railway Executive, and Mr. T. F. Cameron, Chief Regional Officer, Scottish Region. Some of Mr. Elliot's remarks at a Press conference in Glasgow form the subject of editorial notes in our February 13 and this week's issues. The party saw the creosoting depot at Greenhill, and then visited Stirling, where Mr. Elliot opened a new office block and new staff buildings, including a messroom, which form part of an extensive modernisation scheme. The new locomotive shed under construction at Bathgate Motive Power Depot and the new staff amenities building at Cadder marshalling yard were inspected. At Cowlairs the area involved in the re-signalling scheme was examined and a survey was made of the Glasgow suburban lines recommended for electrification in the Inglis Report. Mr. Elliot also visited the four Glasgow termini to observe the residential traffic during the evening peak period.

Ulster Transport Poster.—A new poster for the Ulster Transport Authority, by Mr. Lance Cattermole, bears a map of

Northern Ireland, marking the chief towns, tourist resorts and beauty spots, and the main physical features, surrounded by views of well-known or typical scenes.

New Inquiry Office at Paddington.—A new inquiry office of modern design on No. 1 platform at Paddington was brought into use on February 16.

Italian Express Derailed.—On February 15 the Bari-Naples night express became derailed when entering Benevento Station. Twenty-two passengers were killed and over 100 injured, 25 of them seriously. Nine of the eleven coaches of the train overturned, another striking a brick storehouse, and only the last coach remained upright. Rescue parties had great difficulty in extricating the survivors and the bodies of the victims from the wreckage.

British Railways, Southern Region, Lecture & Debating Society.—On March 4 at the Chapter House, St. Thomas' Street, London, S.E.1, at 5.45 for 6 p.m., an illustrated lecture will be given before the British Railways, Southern Region, Lecture & Debating Society, on "Change of Electrical Frequency, London Area, Southern Region." The speakers will be Mr. A. Watt, Electrical New Works & Development Section, Railway Executive, and Mr. R. E. Coward, Assistant Engineer, Electrification, Southern Region. The chair will be taken by Mr. F. E. Campion, Civil Engineer, Southern Region, and Vice-President of the Society.

Renovation of Hastings Line Steam Stock.—The Southern Region announces that much improved corridor stock is being introduced in steam-hauled trains between Charing Cross and Cannon Street and Hastings via Tunbridge Wells. Nearly £100,000 is being spent on modernising the interior of over 100 vehicles. The first train of this rolling stock was brought into service last Monday, when the 8.10 a.m. from Hastings to Cannon Street consisted of ten coaches completely refurbished. This train forms the 5.6 p.m.



A new poster of the Ulster Transport Authority drawing attention to the diversity of tourist attractions in Northern Ireland

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is exempted from the provisions of the Notification of Vacancies Order, 1952.

UNION OF SOUTH AFRICA. Engineer offers services and office in Johannesburg or elsewhere in the Union to a British firm at present not represented there. Complete and personal knowledge of whole territory in either heavy or medium engineering. All replies will be forwarded in strict confidence to the Advertiser.—Box 736, *Railway Gazette*, 33, Tothill Street, London, S.W.1.

THE DIRECTOR-GENERAL, INDIA STORE DEPARTMENT. 32/44 Edgware Road, London, W.2, invites tenders for the supply of:—Wheels and Axles for railway carriages and wagons. Qty. 110 pairs of Wheels and Axles, and Qty. 600 Wheels. Forms of tender, which are returnable by Friday, April 3, 1953, may be purchased from this office upon payment of a fee of 10s. Reference—No. 3839/52 must be quoted in all applications.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

from Cannon Street to Hastings. Although the steel position does not allow new stock to be built for this line, the modernised corridor coaches compare not unfavourably with those recently built to British Railways standards. Special stock is used on the Hastings line steam services because of the restricted loading gauge necessitated by tunnel diameters.

Flood Relief Parcels Conveyed by Train.—By Thursday, February 12, more than 141,000 parcels of clothing and bedding for the relief of flood victims had been conveyed free of charge by British Railways passenger services. In addition many tons had been carried by goods train.

New Anglo-Scottish Air Service.—British European Airways announce that a new air service between Glasgow, Edinburgh, Birmingham, and London will begin on April 19. Scottish Airlines stated recently that the daily air service between Prestwick, Burtonwood, and London has been withdrawn, as it has not been found to be economic as a single service.

Summer Bookings via Stranraer.—The loss of m.v. *Princess Victoria* on the Stranraer-Larne crossing has led to consideration of her replacement by a relief steamer. This was discussed at a recent meeting in Belfast between representatives of British Railways and the Ulster Transport Authority. A statement after the meeting says that after opening summer bookings on February 2, two months earlier than last year, it is regretted that the issue of steamer reservation and berth tickets has been temporarily curtailed until the position is clarified. The public may rest assured that everything possible is being done to meet the requirements of Northern Ireland.

Buffet Cars on the "Midlander."—The "Midlander" (9.45 a.m. Wolverhampton to Euston and 5.45 p.m. Euston to Wolverhampton—2.15 p.m. on Saturdays) now includes a buffet car as well as first and third restaurant cars. While the first and third class restaurant cars continue to cater for full course lunches and dinners, passengers using the buffet car are able to obtain a choice of snacks, sandwiches, cakes, tea, coffee, and other refreshments from the buffet counter which, with seating

HIGH COMMISSIONER FOR PAKISTAN
APPLICATIONS are invited for posts of Inspectors (£600 × £20 — £680 p.a.) and Assistant Inspectors (£500 × £20 — £580 p.a.) with headquarters in London. Qualifications: Corporate Membership Institute of Mechanical Engineering or University Degree/Diploma carrying exemption from parts A & B of Institute's exam, with either technical experience in manufacture, maintenance and/or inspection of Railway wagons, locomotives, and other rolling stock, or experience and knowledge of diesel and steam power plants, road-making machinery and machine tools. Age 35/45 years. Applications by letter, giving full details of qualifications and experience to ESTABLISHMENT OFFICER, 35, Lowndes Square, London, S.W.1.

B. H. RAILS FOR SALE. 200 tons 90/95 lbs. per yard. Lengths 45/60 ft.—PIKE Bros., Private Sidings, Colnbrook, Bucks. Phone 175.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

accommodation, occupies the space in a car formerly taken up by the usual restaurant car seats and tables. The complete kitchen portion of the car remains and serves the buffet as well as the two restaurant cars. It is intended to extend the restaurant-buffet facilities to other services as vehicles become available.

Carlton-on-Trent Passenger Service Withdrawn.—On and from March 2 Carlton-on-Trent Station, between Newark and Retford, Eastern Region, will be closed to passengers. Parcels will continue to be accepted. A bus service between Newark and Retford is operated by the Lincolnshire Road Car Co. Ltd.

Neon Signs at Romford Station.—Neon signs advertising the electric train service to London have been erected on each side of the bridge across the road adjacent to Romford Station, Eastern Region. The signs, supplied and erected by Claude-General Neon Lights Limited, are each 6 ft. high and 45 ft. long. They are clamped to the sides of the bridge. The neon tubing is blue, 15 mm. in diameter for the 16-in. letters of "British Railways,

DISTRICT MECHANICAL ENGINEER required by British Railway in Nyasaland and Portuguese East Africa. Age about 35. Applicants must be familiar with locomotive, carriage and wagon repair maintenance and must be a member of recognised Institute. Experience of diesel locomotives would be an advantage. Married man preferred. Salary £850 × £30 to £1,030 per annum. Family allowances. Free passage for self and family up to three free unfurnished quarters. Free medical adult fares. Contributory pension scheme. Six months leave on full pay after each tour of 3/3½ years. Write, giving full particulars of age, education, experience, to—Box "G.D." c/o J. W. VICKERS & Co., Ltd., 7/8, Great Winchester Street, London, E.C.2.

REQUIRED by the Central Railway of Peru 200 Locomotive Assistants preferably single and between 26/30. Qualifications: Full apprenticeship with British Railways or Locomotive Builders and experience in one or more of the following: Railway Machine Tool Operation, Welding, Boiler work, Locomotive Running or Drawing Office. Apply—SECRETARY, PERUVIAN CORPORATION LTD., 144, Leadenhall Street, London, E.C.3.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

Romford"; and 11 mm. in diameter for the 12-in. letters of "Frequent Electric Trains to London."

Superheater Co. Ltd.—The directors of the Superheater Co. Ltd. announce a scrip issue of one 5s. "A" ordinary share for every six ordinary and/or "A" ordinary held on March 7. The issue will require 176,400 "A" ordinary shares for which renounceable allotment letters will be issued. An extra-ordinary meeting will be held on March 12 to pass the necessary resolution.

Fishguard & Rosslare Railways & Harbours Company.—The accounts for the half-year ended December 31, 1952, show expenditure of £17,898, of which £15,158 was for improved cranes and £4,162 for staff amenities, at Fishguard in both cases. Of £35,735 provided under the guarantee of the B.T.C. and Coras Iompair Éireann, £13,904 was devoted to interest on debenture stock at 3½ per cent and £21,659 to dividend on the new guaranteed 3½ per cent preference stock.

Heavy Iron Ore Traffic on British Railways.—British Railways iron ore carryings for the week ended February 7 (330,000 tons) exceeded by nearly 7,000 tons the previous week's tonnage, which was the highest for over five months. In the same week 219,040 tons of iron and steel from the principal steel works were conveyed. During the 48 hr. up to 6 a.m. on February 16, 414,690 tons of deep-mined and opencast coal were cleared, compared with 400,020 tons the previous weekend, making a total of 3,180,750 tons for the week.

Mond Nickel Fellowships.—The Mond Nickel Fellowships Committee invites applications for Fellowships of an approximate value of £900 to £1,200 for 1953. Fellowships will be awarded to selected candidates of British nationality with degree or equivalent qualifications to enable them to obtain wider experience and additional training in industrial establishments, at home or abroad, to make them more suitable for future employment in senior technical and administrative positions in British metallurgical industries. Each Fellowship will cover one full working year. Applicants will be required to state details of the programme they wish to carry out. Particulars and forms of applica-



Neon sign advertising electric train services on Romford Station bridge, Eastern Region

tion are available from the Secretary, Mond Nickel Fellowship Committee, 4, Grosvenor Gardens, London, S.W.1. Completed application forms are required by June 1.

Forthcoming Meetings

- February 21 (Sat.).—Railway Students' Association. Visit to South Lambeth Goods Depot, Western Region, at 9.30 a.m.
- February 21 (Sat.).—Institute of Transport, Southern Section, at the Royal Pier Pavilion, Southampton, at 12.30 p.m. for 1 p.m. Annual luncheon and visit of President.
- February 21 (Sat.).—Stephenson Locomotive Society, North Eastern Area, at the Y.M.C.A., Albion Place, Leeds, at 2.30 p.m. Paper on "Some Aspects of Locomotive Design," by Mr. C. Beech.
- February 21 (Sat.).—Stephenson Locomotive Society, Scottish Area, at the Tudor House, Falkirk, at 3 p.m. Annual general meeting and dinner.
- February 24 (Tue.).—Institute of Transport, at the Connaught Rooms, Great Queen Street, W.C.2, at 12.30 p.m. for 1 p.m. Informal luncheon.
- February 25 (Wed.).—Institute of Traffic Administration, London Centre, at the Kingsley Hotel, Bloomsbury Way, London, W.C.2, at 7.15 p.m. Debate on Denationalisation of Long-distance Road Transport.
- February 25 (Wed.).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6.15 p.m. Paper on "International Transport of Refrigerated Goods by Rail," by Mr. W. Purdom, General Agent for Great Britain, Interfrigo Company.
- February 25 (Wed.).—Royal Society of Arts, at John Adam Street, Adelphi, W.C.1, at 2.30 p.m. Cadman Memorial Lecture "Improving Coal Production," will be read by Mr. E. H. Browne, Director-General of Production, National Coal Board.
- February 26 (Thu.).—British Railways, Southern Region, Lecture & Debating Society. Visit to the Post Office Railway, Mount Pleasant, London, E.C.1, at 6 p.m.
- February 26 (Thu.).—Institution of Electrical Engineers, at Grosvenor House, Park Lane, London, W.1, at 7 for 7.30 p.m. Annual Dinner.
- February 26 (Thu.).—South Wales & Monmouth Railways & Docks Lecture & Debating Society, in the Board Room of the Dock Manager's Office, Swansea, at 6.45 p.m. Paper on "Historical Notes on the Railways of the Western Region in South Wales and Monmouthshire," by Mr. D. S. M. Barrie.
- February 27 (Fri.).—Institute of Transport, Scottish Section, at the City Transport Offices, Glasgow, at 6 p.m. Paper on "The Laws of Economics as Applied to Transport," by Mr. E. R. L. Fitzpayne.
- March 4 (Wed.).—Institution of Railway Signal Engineers, at the Works of the Westinghouse Brake & Signal Co. Ltd., Chippenham, Wilts, at 6 p.m. Paper on "Power Signalling Equipment Design and Performance Related to Installation and Maintenance," by Mr. R. J. M. Knotts.
- March 4 (Wed.).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St.

- Thomas' Street, S.E.1, at 5.45 p.m. for 6 p.m. Illustrated lecture on "Change of Electrical Frequency London area, Southern Section." Speakers Messrs. A. Watt and R. E. Coward.
- March 4 (Wed.).—British Wood Preserving Association, in the Henry Jarvis Hall, R.I.B.A., 66, Portland Place, London, W.1, at 7 p.m. Brains Trust on Timber Preservation. Questionmaster: Mr. W. E. Bruce, Secretary of the Wood Preserving Association.
- March 5 (Thu.).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, at 5.30 p.m. The Sir Seymour Biscoe Tritton Lecture on the subject of "Efficiency in Loco-

motives," will be delivered by Mr. F. Q. den Hollander, President, Netherlands Railway.

- March 6 (Fri.).—Institution of Locomotive Engineers, at the Dorchester Hotel, Park Lane, London, W.1, at 12.30 for 1 p.m. Annual luncheon.
- March 6 (Fri.).—The Railway Club, at 57, Fetter Lane, London, E.C.4, at 7 p.m. Paper on "The Railways of Anglia, Cambria, Hibernia and Wnglia," illustrated by cinematograph, by Mr. C. J. Barnard.
- March 6 (Fri.).—Locomotive Society of Scotland, at 302, Buchanan Street, Glasgow, C.2, at 7.15 for 7.30 p.m. Paper on "Locomotive Boilers" by Mr. M. Smith.

Railway Stock Market

Business in stock markets has continued active with the emphasis on industrial sections, though there was a marked increase of interest in Kaffir gold shares as well. The main factors drawing attention to industrial shares have been market talk of higher dividend possibilities and the general recognition that many shares are priced in the market at well below their value based on assets. Recognition of the latter has been the main factor which has led to the many recent company merger and takeover developments. A timely warning came this week from Mr. Allan Kyle, chairman of Jonas Woodhead & Sons, when he pointed out that developments of this kind if continued would be a disturbing feature because of the ruthless depredations of financial wizards who realise that old-established companies which have carefully nursed their resources must have assets out of all proportion to the Stock Exchange value of their shares. British Funds have shown firmness, and sentiment generally has continued to be helped by the hope that the Budget will bring some reduction in taxation.

The main centre of attraction in foreign rails was again White Pass & Yukon no par value shares, which in active dealings have risen to \$26½ at the time of going to press with convertible debentures up to £97½. These levels are not justified by the current rate of earnings, but speculation in the shares is the result of the prospect of big expansion in earnings if a long view is taken, and also of the possibility that a takeover offer from U.S.A. interests might come along in due course.

Canadian Pacific have been more active around \$56½, while the 4 per cent non-cumulative preference stock was £63½ and the 4 per cent debentures £79.

There has been little business in United of Havana stocks in the absence of any news of takeover moves. The "A" stock was 54, the "B" 48½, the 5 per cent income stock 16 and the consolidated stock 24.

Antofagasta issues were a little firmer with the ordinary at 9½ and the 5 per cent preference 47, while business at 66 was recorded in the 5 per cent debentures. Brazil Railway bonds marked £7, Costa Rica first debentures £58½, and Guayaquil & Quito 5 per cent first bonds up to £38.

There were again a few markings in the old Russian railway bonds, the Russian South Eastern showing business at 6s. 3d.

Manila Railway issues have been quiet with the "A" debentures at 78 and the preference shares 8s. 6d.

Mexican Central "A" debentures were

66½. Nitrate Rails shares kept at 21s. and Taltal shares a 14s. 9d. San Paulo units were 6s. 9d. Dorada ordinary stock remained around 58. Barsi Light Railway changed hands around 119. A sharp rise in the shares of Tanganyika Concessions shares to 64s. 3d. was attributed to attention being drawn to the big potentialities of the company's Benguela Railway interests.

Among road transport shares, South-down were 29s. 9d., West Riding 33s. 6d. and Lancashire Transport 42s., while Maidstone & District marked 25s. 3d. B.E.T. deferred stock was £480.

There was further steady buying of engineering and kindred shares, with sentiment helped by the prospect of bigger steel supplies and also by the general recognition that current market prices of most engineering shares are very moderate in relation to their value based on assets. Vickers were good at 48s. 7½d., Cammell Laird 5s. shares 12s. 6d., Thornycroft 52s. 6d., John Brown 44s. 3d., while Babcock & Wilcox were 72s. 3d. and Clarke Chapman, on higher dividend talk, were marked up to 63s. 6d. Guest Keen at 54s. 9d. were again favoured on the possibility of a larger dividend, while Ruston & Hornsby further strengthened to 41s. 9d., Tube Investments were 61s. 9d., and T. W. Ward, another share favoured on higher dividend possibilities, were up to 75s. 9d. Ransome & Marles were 25s. 7½d. and Davy & United held their rise to 37s. Elsewhere, Renold & Coventry Chain were 39s. and British Aluminium strengthened to 42s. 4½d. Murex were 58s. 3d. and Neepsend 5s. shares 29s. 4½d.

Share prices in some cases are now reaching levels only justified by higher dividends. Sentiment in stock markets is reflecting hopes of bigger payments; but although there may be a tendency to ease the conservative dividend policy which has been followed in recent years, it must be expected that, in general, industrial and other companies will continue to place a large part of their profits to reserve. Competition at home and abroad is increasing and it is prudent to expect that resources will be conserved to add strength to future earning power.

Among shares of locomotive builders and engineers, Beyer Peacock were 35s. 9d., Hurst Nelson 43s. 3d., Birmingham Carriage 35s. 1½d., while North British Locomotive moved up to 15s. 3d. Central Wagon have been active up to 64s. Charles Roberts 5s. shares were 20s. 1½d., Wagon Repairs 5s. shares 12s. 6d. and Gloucester Wagon 10s. shares 12s. 3d. Vulcan Foundry rose to 24s.